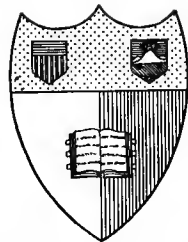


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DETAILS OF
BUILDING CONSTRUCTION
CLARENCE A. MARTIN

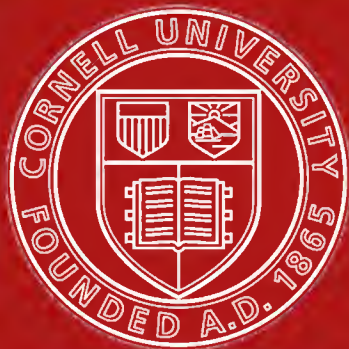


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DETAILS OF BUILDING CONSTRUCTION

BY
CLARENCE A. MARTIN
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BATES & GUILD COMPANY

1908

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PREFACE.

THE author would have preferred to present this book to the public without a prefatory note, had not some explanations seemed necessary in order to prevent misunderstanding. The work is not the result of a deliberate attempt at book-making, undertaken with "malice prepense," but is the outcome of the efforts made by a teacher of architectural construction to present a part of his subject to his students. The drawings, consisting originally of rough sketches on large sheets of wrapping-paper, were at first used for temporary illustration only; but the results proved so satisfactory that it seemed best to study the work more carefully and to put it into more permanent form for class-room use.

This was undertaken some three years ago, still without thought of publication; and it was only after the first sixteen plates in blue-print form had been used for some time that their favorable reception by students, and by others who learned of them through students, suggested that they might prove useful to workers outside the college class-room. The revision and completion of the work were accordingly undertaken. Two or three of the original plates have been redrawn; but to redraw them all for the sake of uniformity and possible minor improvements would have involved an amount of labor not justified by the advantage gained, and would have necessitated a longer delay in publication than seemed advisable. In method of presentation, therefore, the work still shows to a considerable extent the various stages of its progress through a period of full three years. In other respects the attempt has been made, by means of careful revision in the light of the best criticism available, supplemented by continuous study and independent investigation, to present the best methods employed or recommended in present-day practice.

In scope the work limits itself to presenting only such details, principally in wood, as are in common use in domestic architecture and in smaller public buildings. The subject of framing has been entirely omitted, partly because it has been aptly treated elsewhere, partly because it does not lend itself readily to the method of treatment here chosen. In the matter of design the author wishes to put in a disclaimer. Nothing is further from his intention than an attempt to dictate in a question of design, but it has been necessary to use design in order to show construction. Therefore, while every effort has been made to show only the good in design, it should be borne in mind that the book is a treatise not on that subject but on construction.

In the method of presentation, the inconsistency arising from the fact that the work was so long in a process of becoming, and that its final evolution into book form remained so long unforeseen, has already been mentioned. The exact character of this inconsistency may be seen by comparing the plates treating of windows with those treating of doors. In treating of windows one plate is devoted to a certain type of window, with the corresponding details, then another plate takes up a different type, and so on. When, however, the subject of doors is taken up, one plate is devoted to types of doors, another to details of frames, another to details of panels, etc. For this there was no remedy except the radical one of redrawing the plates; and the case did not seem to warrant recourse to measures so heroic, since it is, after all, an open question as to which method is the better.

The device of lettering the notes on the plates, instead of presenting them separately in the form of text, was of necessity a part of the original idea, which contemplated only separate plates; and when the work of revision was undertaken, it seemed wise to retain the scheme. It is hoped that the obvious advantage of having the notes on the plates in close juxtaposition to the drawings to which they refer will more than compensate for the disadvantages of an enforced brevity so severe as to be almost incompatible with good English, and of an appearance of dogmatism which the writer would have preferred, if possible, to avoid. That the notes must be read in conjunction with the study of the drawings, if the latter are to be fully comprehended, would seem to be a fact so obvious as to require no emphasis, had not some of the criticisms received during the progress of the work revealed the fact that the notes had been neglected, despite the device used for securing their perusal.

In the matter of nomenclature care has been taken to use only such terms as are sanctioned by the authority of the best writers on architecture and building, and to use them accurately, not in the hope of bringing order out of the chaos of architectural terminology, but only in the hope of escaping the accusation of having worse confounded the present deplorable confusion.

The drawings have been carefully prepared after a long, practical experience and with the aid of one of the best libraries in this country, supplemented by a large collection of working drawings from the offices of leading architects. No pains have been spared to free them as far as possible from the taints of local practice; and while not all that is shown is unreservedly recommended, great care has been taken not to include anything that has not the authority of good practice, and that may not fairly be called good construction when the element of cost is considered. Some cheap methods of construction have been shown and recommended as good of their kind. Such, for instance, are the wood sills shown on Plate VI., which have already been subjected to adverse criticism, but which it seemed best, after mature consideration, to retain. The wood sill in other than frame buildings has the same excuse for being as has the shingle roof—it is cheap. It can of course be justified only on the score of expense; but it has the sanction of good practice in sections of the country where cut stone is not easily and cheaply obtainable; it is painted and treated frankly as wood, and has stood the test of time.

It has several times been suggested that the dimensions of parts be figured on the various details throughout the work, but to the author this has seemed entirely too dogmatic a procedure. As the sturdy Pennsylvania farmer builds his house with 3 x 5-inch studs,—if he does not build of stone,—and does not think of extravagance, while the toiling dweller in the cyclone regions of the West builds with 2 x 4-inch studs and wonders if he cannot safely space them 24 inches on the centers, so the 2½ or 3-inch window-sill that is accepted as a matter of course in one section would strike terror to the heart of the builder in the thriftier region where the 2-inch sill is an extravagance. In order to make the drawings, however, it was necessary to show material of definite size and thickness, and the dimensions chosen for the various parts have been made to represent as nearly as possible the average of good practice. As everything has been most carefully drawn to scale, the sizes used can be ascertained to a nicety by simply measuring them on the drawings. The type window, Plate IV., has been pretty fully figured, but beyond this it was felt that figured dimensions would seem to be an attempt at finality that would tend to restrict the liberty of choice and the exercise of individual judgment on the part of designer and constructor, without which there can be no true progress. If the work is to be used simply as a copy-book it must inevitably fail of its purpose, which in the intent of the author has been much broader.

In conclusion the author wishes to express his sense of obligation toward all those who have so generously assisted him both directly and indirectly with their criticisms and suggestions during the progress of the work, and his hope that the book will be found sufficiently helpful to elicit further criticism looking towards the improvement of future works of this character, whether by the author or by others.

C. A. M.

ITHACA, N. Y., *May, 1905.*

LIST OF PLATES.

- I.—DETAILS OF AN ORDINARY CELLAR WINDOW IN A STONE WALL.
- II.—DETAILS OF CELLAR WINDOW WITH SCREEN AND IRON GRILLE.
- III.—DETAILS OF CELLAR WINDOWS AND BASE COURSES FOR FRAME COTTAGES.
- IV.—A TYPICAL DOUBLE-HUNG WINDOW.
- V.—DETAILS OF DOUBLE-HUNG WINDOWS WITH INSIDE SHUTTERS.
- VI.—WINDOWS WITH OUTSIDE SHUTTERS.
- VII.—DETAILS OF COUNTER-BALANCED WINDOWS WITH MULLIONS AND TRANSOMS.
- VIII.—DETAILS OF WINDOWS IN FRAME WALLS.
- IX.—DETAILS OF DOUBLE-HUNG WINDOWS IN FRAME WALLS.
- X.—MISCELLANEOUS DETAILS FOR DOUBLE-HUNG WINDOWS.
- XI.—DETAILS OF BAY WINDOWS WITH COUNTER-BALANCED SASHES.
- XII.—DETAILS OF CASEMENT WINDOWS OPENING OUTWARD.
- XIII.—DETAILS OF CASEMENT WINDOWS OPENING IN.
- XIV.—DETAILS OF A CASEMENT WINDOW WITH MULLIONS AND TRANSOMS AND WITH SASHES OPENING OUTWARD.
- XV.—DETAILS OF A CASEMENT BAY WINDOW.
- XVI.—DETAILS OF PIVOTED CASEMENTS AND EYEBROW DORMERS.
- XVII.—STORM-RESISTING WINDOWS.
- XVIII.—TYPES OF DOORS WITH GENERAL DIMENSIONS.
- XIX.—EXAMPLES OF DOORS IN VARIOUS STYLES.
- XX.—DETAILS OF OUTSIDE DOOR FRAMES, STONE SILL, AND TRANSOMS.
- XXI.—DETAILS OF INTERIOR DOOR FRAMES AND WOODEN SILLS.
- XXII.—DETAILS OF DOORS.
- XXIII.—DETAILS OF SLIDING DOORS.
- XXIV.—DETAILS OF GUTTERS, FOR WOOD, STONE, AND TERRA-COTTA CORNICES.
- XXV.—DETAILS OF BOX CORNICES.
- XXVI.—DETAILS OF OPEN TIMBER CORNICES.
- XXVII.—DETAILS OF OPEN TIMBER CORNICES.
- XXVIII.—MISCELLANEOUS EXTERIOR DETAILS.
- XXIX.—WAINSCOTING AND ARCHITRAVES.
- XXX.—GENERAL INTERIOR FINISH.
- XXXI.—STAIR DETAILS.
- XXXII.—KITCHEN AND PANTRY DRESSERS.
- XXXIII.—FIREPLACE DETAILS.

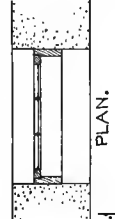
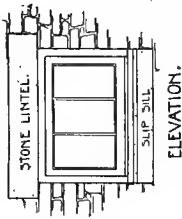
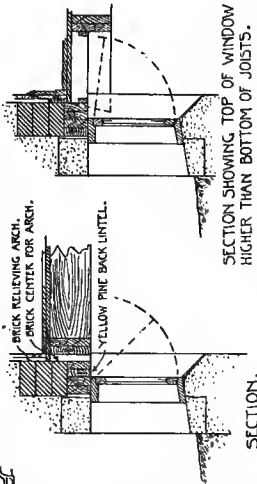
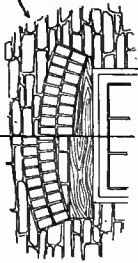
NOTE.

THE THICKNESS OF LUMBER FOR FINISHED WORK.

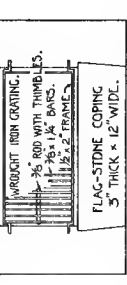
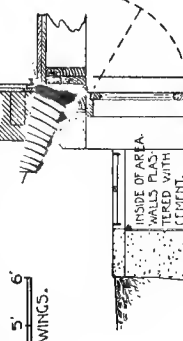
The boards and planks used for sheathing, flooring, and the finer work about buildings measure in the rough 1 in., $1\frac{1}{4}$ in., $1\frac{1}{2}$ in., 2 ins., $2\frac{1}{2}$ ins., and 3 ins. in thickness. White pine and other lumber produced in the North is usually sawed to full thickness so that the planing on both sides can ordinarily be done with a reduction of only $\frac{1}{8}$ in. in thickness; but lumber from the Southern markets, such as yellow pine, etc., is sawed so that it is necessary to count upon a reduction of $\frac{1}{4}$ in. in thickness for all lumber having a nominal thickness of 2 ins. or more. This gives the ordinary stock dimensions for the thickness of finished lumber as follows: $\frac{7}{8}$ in., $1\frac{1}{8}$ in., $1\frac{3}{8}$ in., $1\frac{3}{4}$ in. or $1\frac{7}{8}$ in., $2\frac{1}{4}$ ins. or $2\frac{3}{8}$ ins., and $2\frac{3}{4}$ ins. or $2\frac{7}{8}$ ins.

Finished lumber thinner than $\frac{7}{8}$ in. must be planed down or re-sawed from rough lumber 1 in. or more in thickness. Stock ceiling boards that are made for the market in large quantities are commonly $\frac{7}{8}$ in., $\frac{3}{4}$ in., $\frac{5}{8}$ in., $\frac{1}{2}$ in., and $\frac{3}{8}$ in. in thickness, and the price is gradually scaled down with the thickness so that the $\frac{3}{8}$ in. material is listed at about 60 per cent of the price of the $\frac{7}{8}$ in. material. For ordinary finishing, however, where the stock must be gotten out especially for the particular operation, there is little economy in using $\frac{3}{4}$ in., $\frac{5}{8}$ in. or $\frac{1}{2}$ in. material, as the quantity required for any one operation is usually so small that re-sawing cannot be done economically.

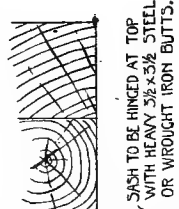
AN INTERIOR ELEVATION SHOWING TWO METHODS OF BUILDING RELIEVING ARCHES OVER WOOD CENTERS OR BACK LINTELS. WHERE INTERIOR FINISH IS USED THE WOOD LINTEL GIVES A FIRM NAILING FOR FIBRINGS, GROUNDS, ETC.



18" 6" 0' 1' 2' 3' 4' 5' 6'
SCALE (1/4" TO 12") FOR SMALL DRAWINGS.



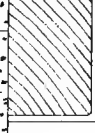
PLAN AND SECTION OF A CELLAR WINDOW WITH AN AREA FOR LIGHT. THE COPING SHOULD BE DOVE-TAILED OR NOTCHED TOGETHER AT CORNERS AS SHOWN ON PLAN. AN AREA SHOULD HAVE A GRATING OVER OR A RAILING AROUND IT WHERE THERE MIGHT BE DANGER OF FALLING INTO IT IF UNGUARDED. THE GRATING IS USUALLY LEADED INTO COPING, BUT IT CAN BE HINGED AND LOCKED IF DESIRABLE. THE SIZES OF IRON SHOWN ABOVE ARE HEAVY ENOUGH FOR ORDINARY PURPOSES WHERE THE SIZE OF AREA IS NOT GREATER THAN 36 X 54. IN CHEAP WORK SIMPLE FLAG-STONES SET ON EDGE MAKE GOOD AREA WALLS AND REQUIRE NO COPING. AREA FLOORS MAY BE HARD BRICKS SET IN SAND, OR SOLID CONCRETE WITH DRAIN; DEPENDING UPON SIZE OF AREA, ITS USE, CHARACTER OF SOIL AND ITS CAPACITY FOR NATURAL DRAINAGE, ETC.



DETAIL OF HEAD.

THE DEPTH OF REVEAL MAY BE INCREASED OR DIMINISHED BY SETTING THE FRAME FARTHER FROM OR NEARER TO THE FACE OF THE WALL, OR BY MAKING THE FRAME ITSELF NARROWER OR WIDER.

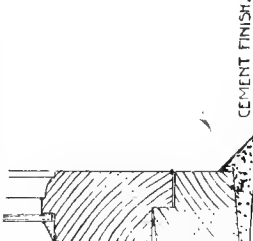
PLUG LEFT ON ENDS OF HEAD AND SILL AND BUILT INTO WALL TO SECURE THE FRAME.



DETAIL OF JAMB.

18" 6" 0' 1' 2' 3' 4' 5' 6' 7' 8'
SCALE (3/8" TO 12") FOR DETAILS.

SECTION OF SASH BAR. (THE SASH BAR IS USUALLY CALLED A MOUNTAIN.)



DETAIL OF SILL.

STONE SILLS NEAR GRADE DO NOT NEED A DRIP. IT IS ALSO CUSTOMARY TO MAKE THESE SILLS "SLIP SILLS", AND FREQUENTLY THEY ARE SIMPLY PIECES OF FLAG-STONE WITH THE FACE EDGES DRESSED AS THE WORK MAY REQUIRE (SEE PLATE III).

CEMENT FINISH.

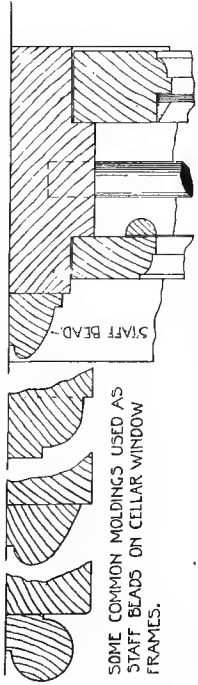


DETAILS OF AN ORDINARY CELLAR WINDOW IN A STONE WALL.

IN A BRICK WALL THE DETAILS WOULD BE THE SAME, THOUGH A BRICK ARCH MIGHT BE USED INSTEAD OF THE STONE LINTEL.

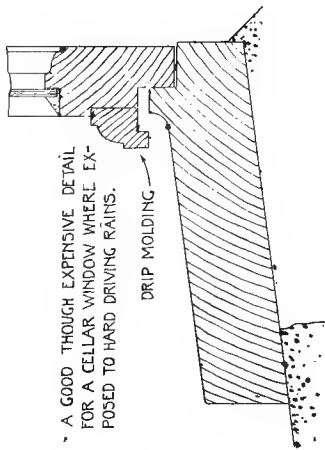
PLATE I.

C.A.M.



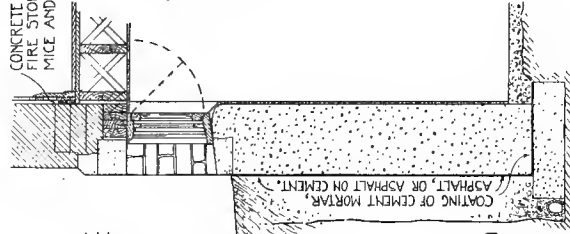
SOME COMMON MOLDINGS USED AS STAFF BEADS ON CELLAR WINDOW FRAMES.

A COMMON AND SOMEWHAT LIGHTER CONSTRUCTION WITH SCREEN OUTSIDE OF GRILLE.

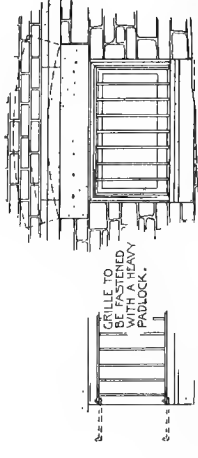


A GOOD THOUGH EXPENSIVE DETAIL FOR A CELLAR WINDOW WHERE EXPOSED TO HARD DRIVING RAINS.

DRIP MOLDING



COATING OF CEMENT MORTAR, ASPHALT, OR ASPHALT ON CEMENT.



PART OF ELEVATION AND PLAN SHOWING A HINGED GRILLE.

ELEVATION.

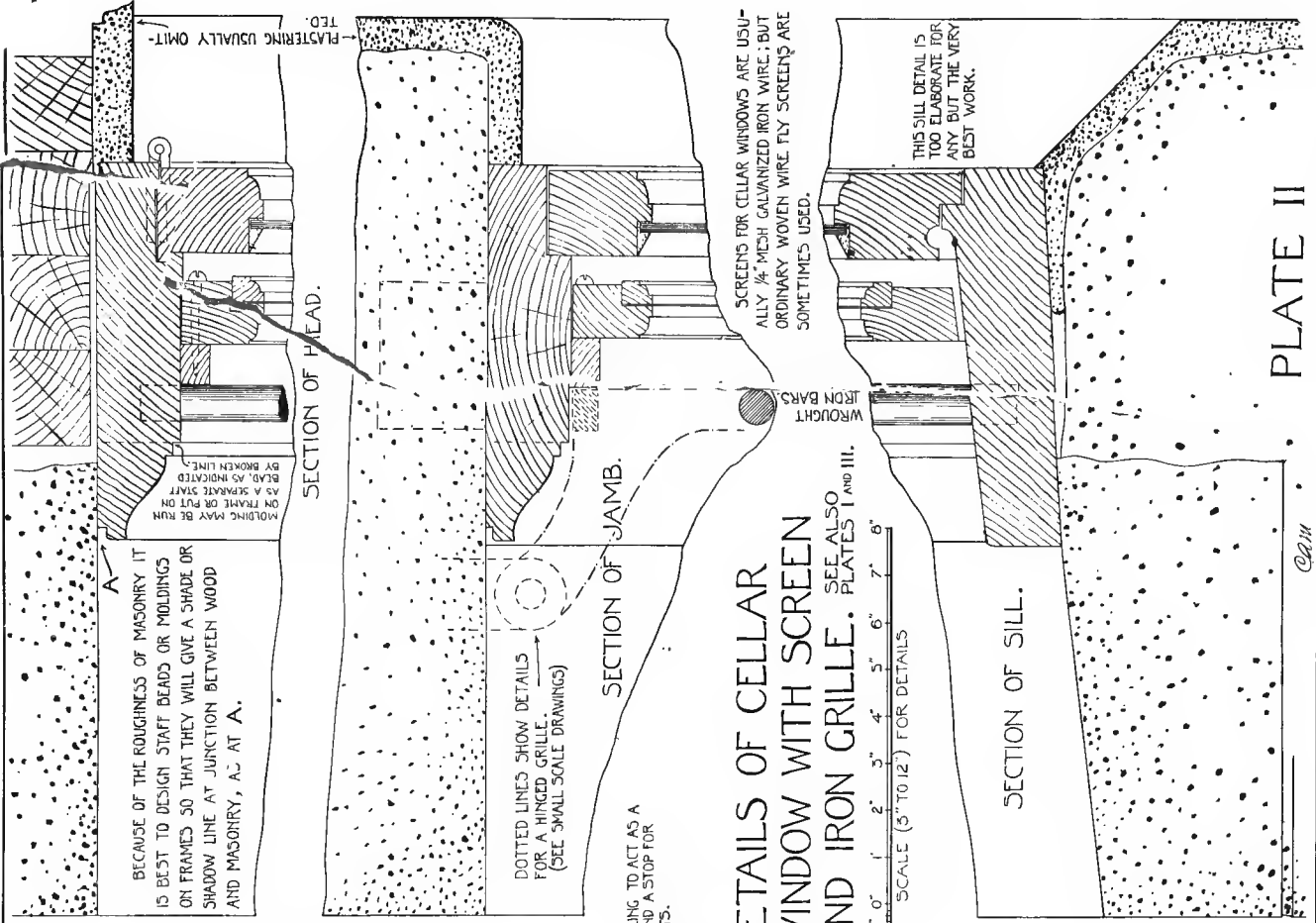


PLAN.

12' 6" 0' 1' 2' 3' 4' 5' 6'
SCALE (1/4" TO 12") FOR SMALL SCALE DRAWINGS.

THIS SECTION OF WALL SHOWS AN ORDINARY OUTSIDE DRAIN WHICH IS QUITE ESSENTIAL IN WET SOILS; AND IN THE BEST WORK THE TOP OF FOOTINGS AND OUTSIDE OF WALLS UP TO GRADE SHOULD BE WELL COATED WITH ASPHALT.

IT IS NOT USUAL TO PLASTER WALLS AND CEILINGS OF CELLARS THOUGH THE WALLS ARE SOMETIMES SMOOTHED UP BY PLASTERING WITH ONE COAT OF BROWN MORTAR. IF FINISHED AS A BASEMENT, THE WALLS SHOULD BE FURRED AND PLASTERED THE SAME AS IF ABOVE GROUND, AND DOUBLE HUNG WINDOWS USED INSTEAD OF CELLAR WINDOWS. FIXED GRILLES SHOULD NEVER BE USED WHERE ROOMS ARE TO BE OCCUPIED, AS THEY MIGHT PREVENT ESCAPE IN CASE OF FIRE.



BECAUSE OF THE ROUGHNESS OF MASONRY IT IS BEST TO DESIGN STAFF BEADS OR MOLDINGS ON FRAMES SO THAT THEY WILL GIVE A SHADE OR SHADOW LINE AT JUNCTION BETWEEN WOOD AND MASONRY, AS AT A.

MOLDING MAY BE RUN AS A SEPARATE STAFF BEAD, AS INDICATED BY BROKEN LINE.

SECTION OF HEAD.

DOTTED LINES SHOW DETAILS FOR A HINGED GRILLE. (SEE SMALL SCALE DRAWINGS)

SECTION OF JAMB.

DETAILS OF CELLAR WINDOW WITH SCREEN AND IRON GRILLE. SEE ALSO PLATES I AND III.

SCREENS FOR CELLAR WINDOWS ARE USUALLY 1/4" MESH GALVANIZED IRON WIRE; BUT ORDINARY WOVEN WIRE FLY SCREENS ARE SOMETIMES USED.

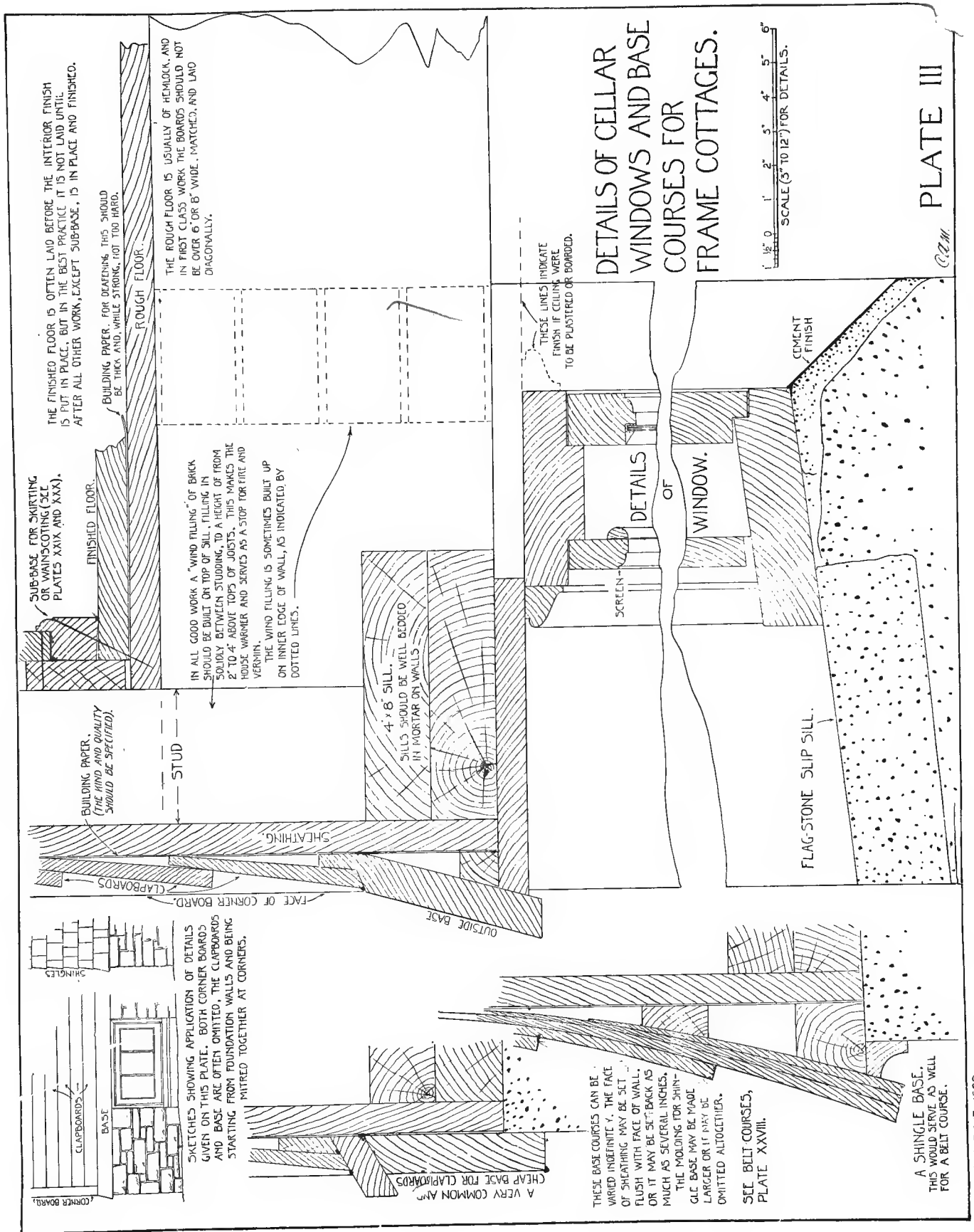
SCALE (3" TO 12") FOR DETAILS

SECTION OF SILL.

THIS SILL DETAIL IS TOO ELABORATE FOR ANY BUT THE VERY BEST WORK.

PLATE II

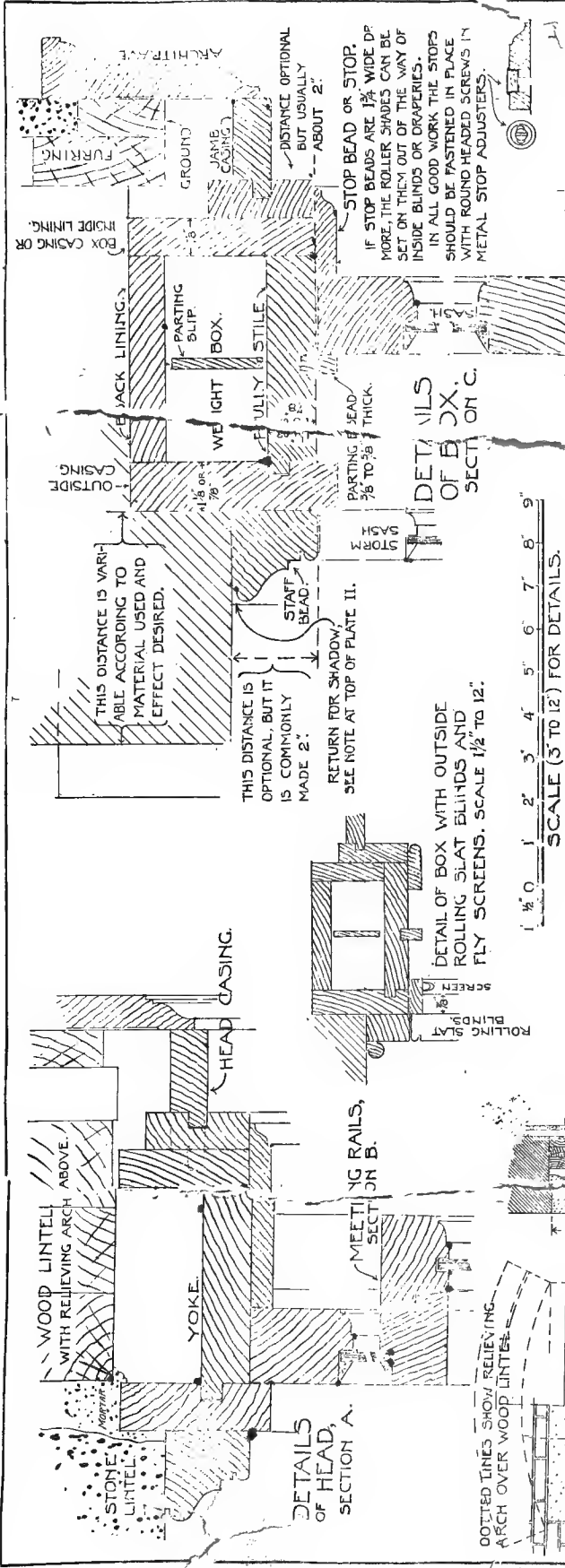
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DETAILS OF CELLAR WINDOWS AND BASE COURSES FOR FRAME COTTAGES.

PLATE III

C. M.



NOTES.

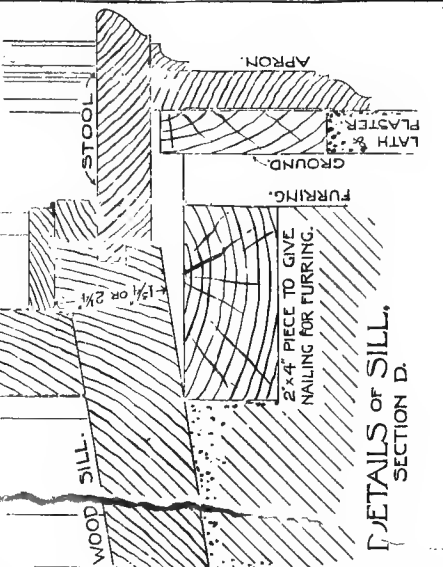
THE ESSENTIAL PARTS OF A DOUBLE HUNG WINDOW FRAME ARE PRACTICALLY THE SAME FOR ALL WINDOWS OF THIS TYPE WHETHER FOR MASONRY OR FRAME WALLS. OUTSIDE CASINGS AND PULLEY STILES ARE OFTEN MADE ONLY 3/8" THICK, BUT 1/2" IS MUCH BETTER. THE HEAD IS SOMETIMES, BUT NOT COMMONLY, BUILT WITH A 2" YOKE. PULLEY STILES AND PARTING BEADS - OR PARTING STRIPS - SHOULD BE OF HARD WOOD, OILED, NOT PAINTED. DRAFTSMEN: ALMOST INVARIABLY INDICATE PULLEY STILE GROOVED INTO OUTSIDE CASING WITH TONGUE ON FACE SIDE OF STILE, WHILE MILL MEN MAKE IT AS HERE SHOWN - A METHOD WHICH THE WRITER CONSIDERS DECIDEDLY BETTER AS GIVING A LESS VARIABLE WIDTH IN FRAME FOR THE OUTER SASH. THE PARTING SLIP IS OFTEN OMITTED IN CHEAP WORK; BUT IT IS VERY DESIRABLE, ESPECIALLY WITH RECTANGULAR WEIGHTS, TO KEEP WEIGHTS FROM CLASHING. IT SHOULD BE HUNG FROM TOP AND SHOULD BE FREE TO SWING AS A PEDULUM. FOR WINDOWS OF ORDINARY SIZE WITH CAST IRON WEIGHTS 2 1/4" TO 2 1/2" IS DEEP ENOUGH FOR WEIGHT BOXES, BUT HEAVY SASHES REQUIRE EITHER LARGER BOXES OR LEAD WEIGHTS. RECTANGULAR WEIGHTS ECONOMIZE BOX ROOM MUCH BETTER THAN THE ROUND ONES. THE WIDTH OF OUTSIDE REVEAL AND OF INSIDE JAMB VARIES WITH THE THICKNESS OF WALL AND POSITION OF FRAME IN WALL.

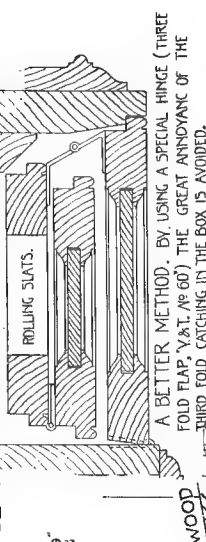
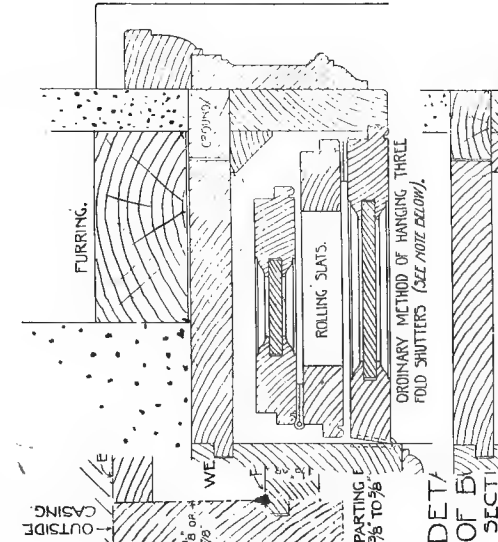
SEE ALSO PLATES V TO XI AND XVII.

A TYPICAL DOUBLE HUNG WINDOW.

Cam.

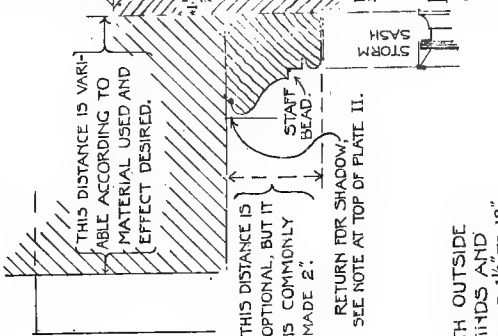
PLATE IV





DOUBLE HUNG WINDOWS E SHUTTERS.

FOR LARGE DETAILS.
5" TO 12".

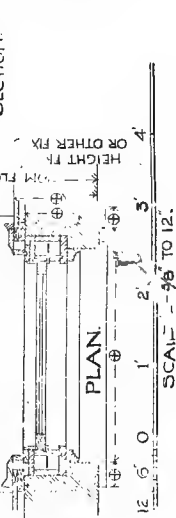
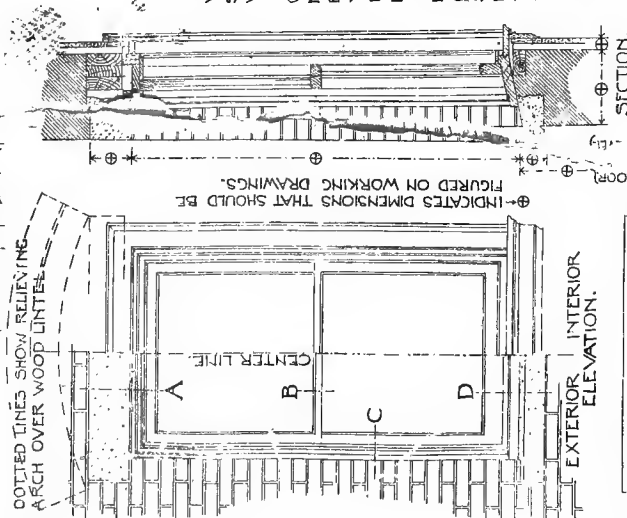
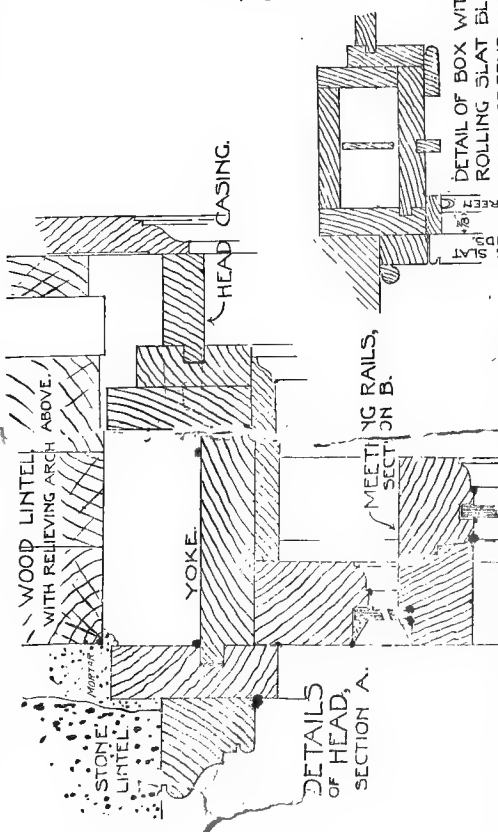


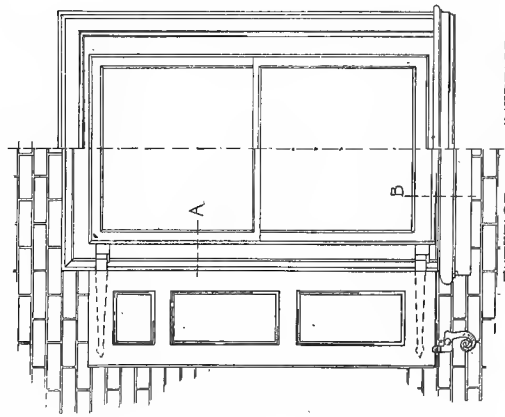
SCALE (3 TO 12) FOR DETAILS.
1 1/2 0 1' 2' 3' 4' 5' 6' 7' 8' 9'

NOTES.

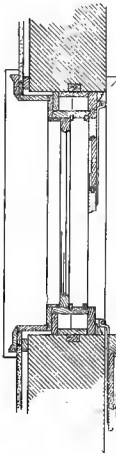
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SEE ALSO PLATES V TO XI AND XVII.



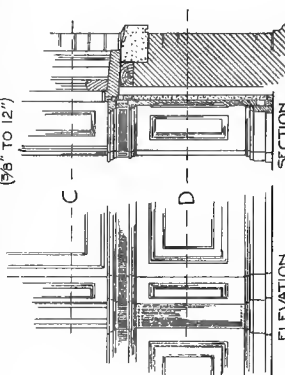


EXTERIOR ELEVATION



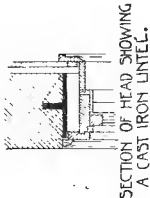
INTERIOR ELEVATION

PLAN.
SCALE FOR SMALL DRAWINGS.
(9/16" TO 12")



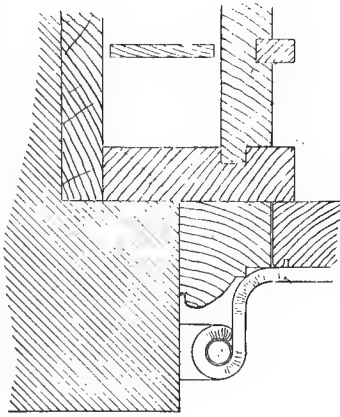
SECTION A.

THIS STRIP HOLDS THE FRAME IN PLACE AND AT THE SAME TIME SERVES AS A WIND STOP.



SECTION OF HEAD SHOWING A CAST IRON LINTEL.

THE SECTION OF BOX SHOWN ABOVE IS A DETAIL THAT IS QUITE COMMON IN SOME PARTS OF EASTERN PENNSYLVANIA. THE 1 3/4" PULLEY STILE IS OBJECTIONABLE BECAUSE IT REQUIRES SUCH LARGE PULLEYS TO CARRY THE WEIGHTS BACK TO THE MIDDLE OF THE BOX. THE SECTION SHOWN BELOW, WHERE STAFF BEAD IS FORMED TO RECEIVE SHUTTER, IS MUCH BETTER.



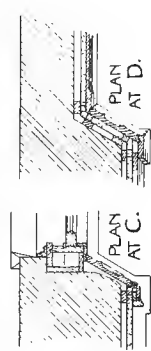
SECTION B.

THIS JOINT SHOULD BE PUT TOGETHER WITH WHITE LEAD PAINT.

THE OUTSIDE WOOD SILL MAY BE MADE PERFECTLY PLAIN AS SHOWN BY DOTTED LINES, OR IT MAY BE INDEFINITELY ELABORATED, ACCORDING TO THE CHARACTER AND REQUIREMENTS OF THE DESIGN.

ELEVATION

SKETCHES SHOWING A 'PANEL BACK' WINDOW, FROM AN OLD EXAMPLE. THE DETAILS OF THIS WORK CAN BEST BE STUDIED UNDER THE HEAD OF WAINSCOTING (SEE PLATES XXIX & XXX).



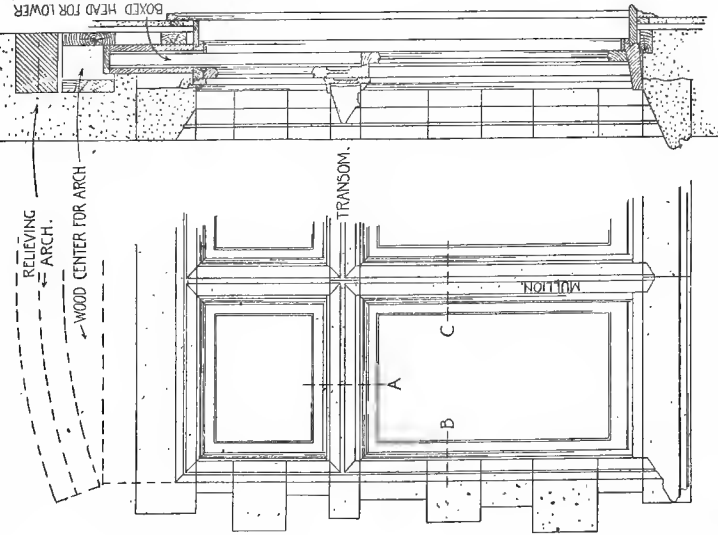
PLAN AT C.

PLAN AT D.

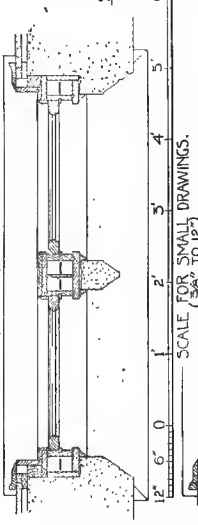
WINDOWS WITH OUTSIDE SHUTTERS.

THE PRINCIPAL DETAILS ON THIS PLATE SHOW AN OLD FASHIONED 'PLANK FRONT' FRAME. THIS TYPE OF FRAME IS QUITE CHARACTERISTIC OF OLD COLONIAL WORK ABOUT PHILA.; AND ALTHOUGH IT IS USED WITH ANY OF THE ARCHES, LINTELS AND STONE SILLS COMMON TO THAT PERIOD, IT IS FREQUENTLY USED WITH WOOD SILLS AND WITHOUT VISIBLE LINTEL, AS HERE SHOWN. THE SHUTTERS HAVE PANELS FLUSH ON THE OUTSIDE AND MOLDED ON THE INSIDE, AND THE HINGES SHOULD ALWAYS BE MADE SO THAT SHUTTERS WILL OPEN OUT FLAT AGAINST THE FACE OF THE WALL. OUTSIDE SHUTTERS CAN NOT BE USED ON HINGED WINDOWS THAT OPEN OUT.

SCALE FOR DETAILS.
(5" TO 12")

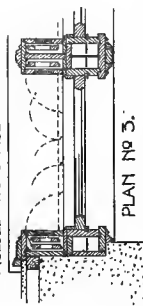


ELEVATION, PLAN, AND SECTION.

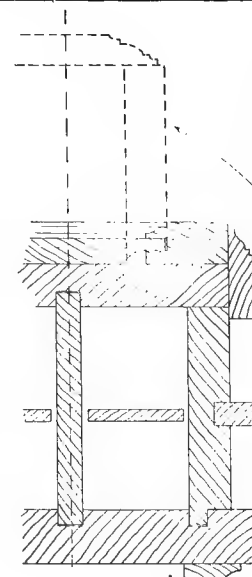
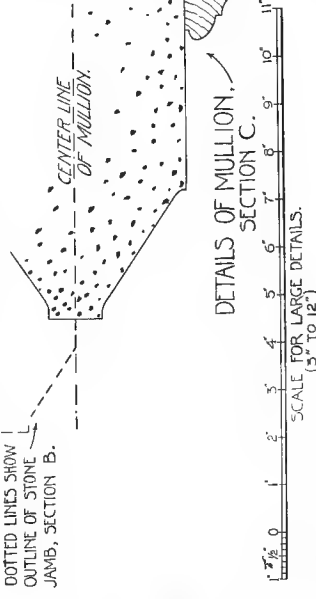
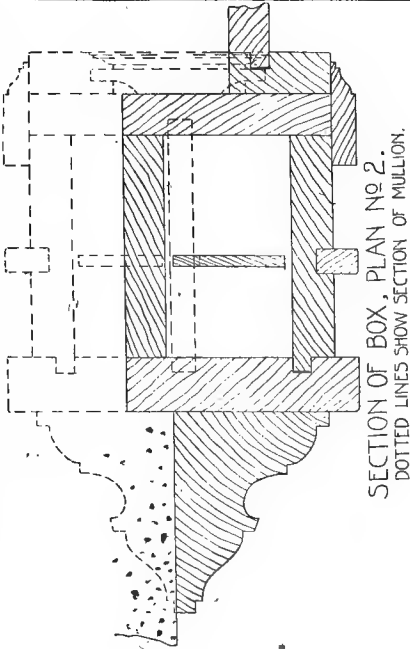
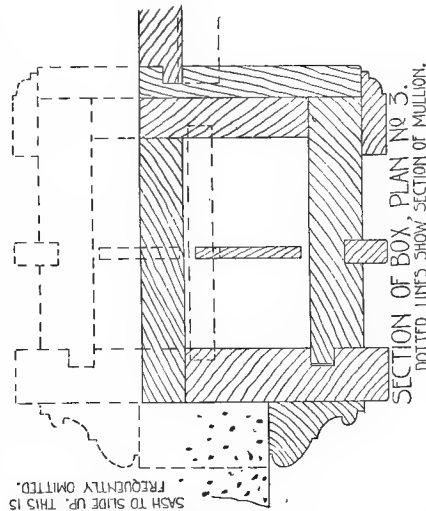


PLAN No 2.

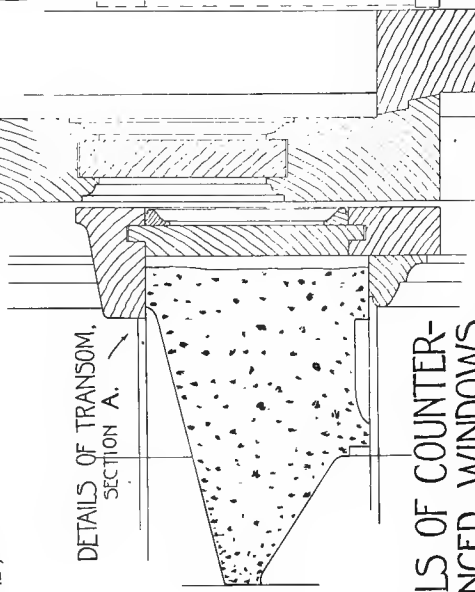
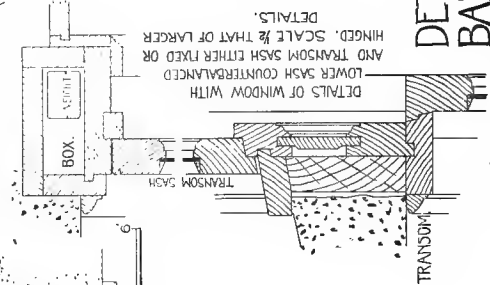
THIS PLAN SHOWS ELABORATELY MOLDED WOOD MULLION.



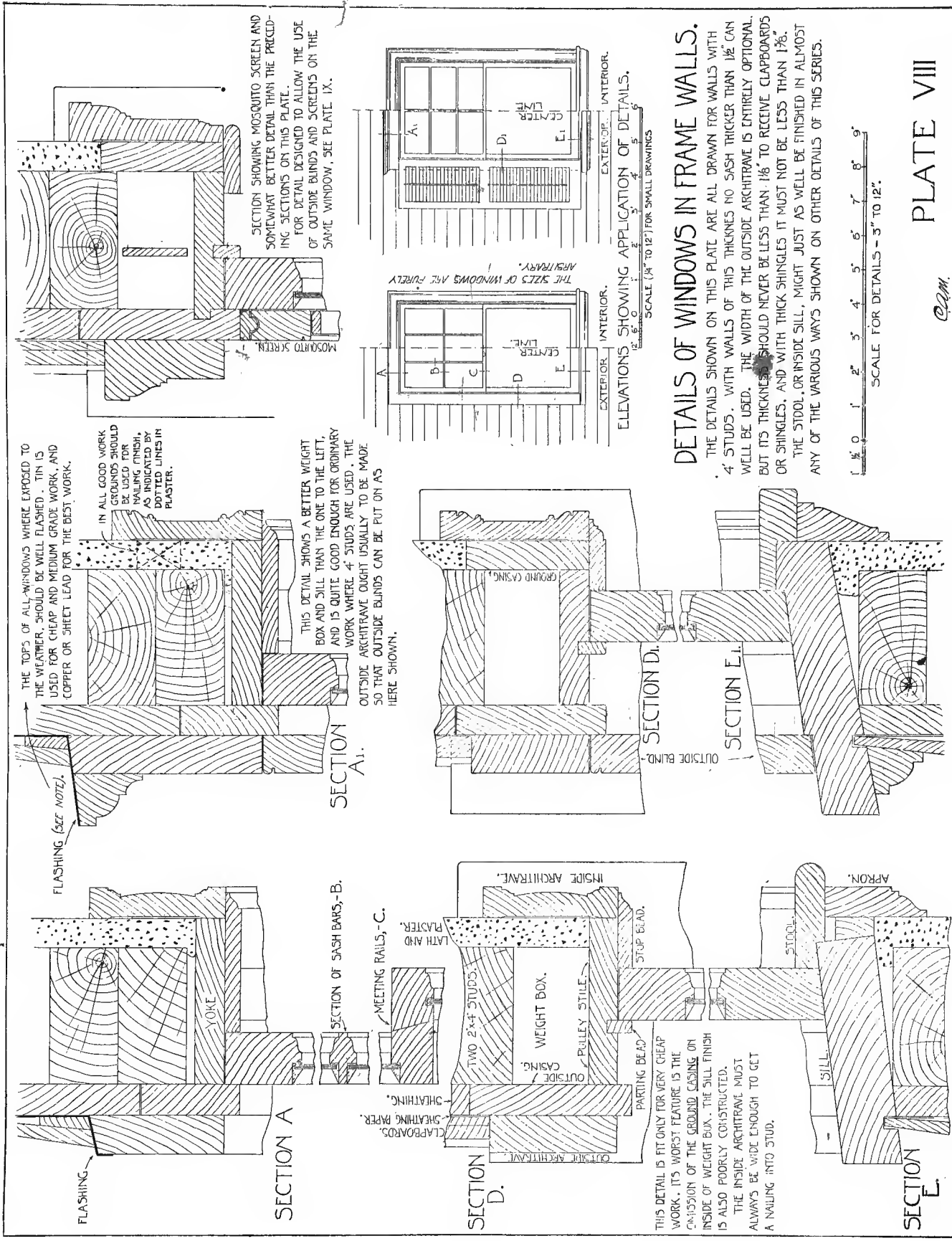
THIS PLAN SHOWS THE ORDINARY METHOD OF HANGING INSIDE SHUTTERS ON A MUP JOINED WINDOW. SEE PLATE V.



THESE DOTTED LINES SHOW A POSSIBLE THOUGH NEITHER COMMON NOR ADVANTAGEOUS FINISH FOR THE INSIDE OF MULLIONS AND TRANSONS. THIS PRINCIPLE CAN, HOWEVER, BE USED TO ADVANTAGE AND A VERY RICH EFFECT OBTAINED BY HOLDING INTERIOR JAMBS, TRANSONS AND MULLIONS IN A MANNER SIMILAR TO EXTERIOR WOOD MULLION SHOWN ON PLAN No 2.



DETAILS OF COUNTER-BALANCED WINDOWS WITH MULLIONS AND TRANSONS.



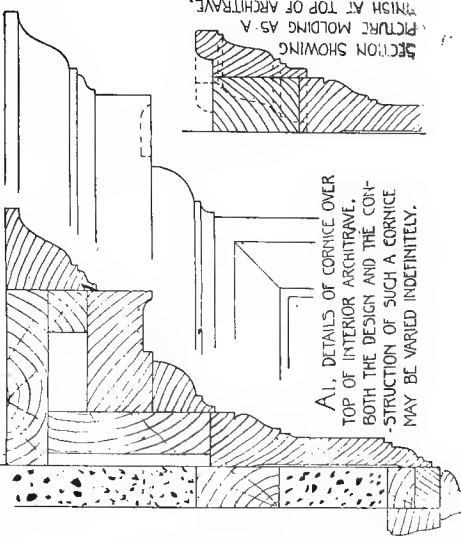
DETAILS OF WINDOWS IN FRAME WALLS.

THE DETAILS SHOWN ON THIS PLATE ARE ALL DRAWN FOR WALLS WITH 4" STUDS. WITH WALLS OF THIS THICKNESS NO SASH THICKER THAN 1 1/2" CAN WELL BE USED. THE WIDTH OF THE OUTSIDE ARCHITRAVE IS ENTIRELY OPTIONAL, BUT ITS THICKNESS SHOULD NEVER BE LESS THAN 1 1/8" TO RECEIVE CLAPBOARDS OR SHINGLES, AND WITH THICK SHINGLES IT MUST NOT BE LESS THAN 1 3/8". THE STOOL, OR INSIDE SILL, MIGHT JUST AS WELL BE FINISHED IN ALMOST ANY OF THE VARIOUS WAYS SHOWN ON OTHER DETAILS OF THIS SERIES.

SCALE FOR DETAILS - 3" TO 12".

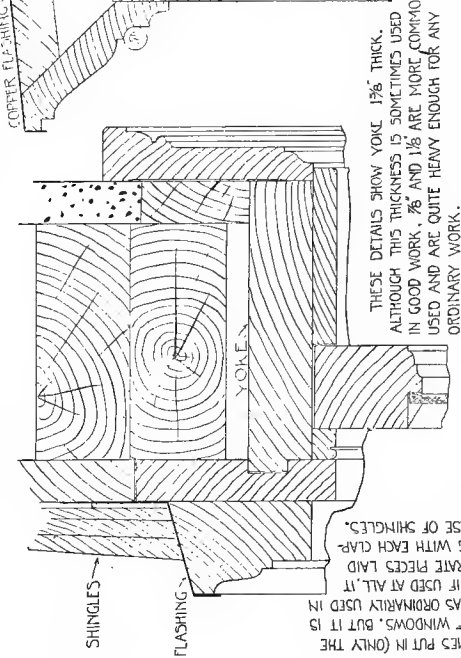
SECTION A.

THIS DETAIL SHOWS THE ORDINARY FINISH ON INSIDE, INSTEAD OF THE CORNICE SHOWN ON THE SMALL SCALE DRAWING BELOW.



A1, DETAILS OF CORNICE OVER TOP OF INTERIOR ARCHITRAVE. BOTH THE DESIGN AND THE CONSTRUCTION OF SUCH A CORNICE MAY BE VARIED INDEFINITELY.

SECTION SHOWING FINISH AT TOP OF ARCHITRAVE.

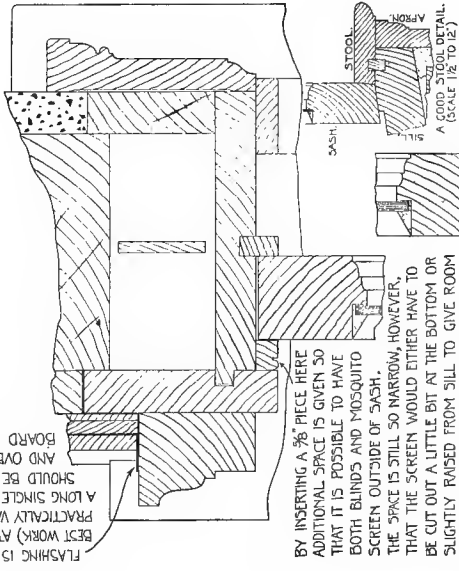


THESE DETAILS SHOW YOKE 1 3/8" THICK. ALTHOUGH THIS THICKNESS IS SOMETIMES USED IN GOOD WORK, 7/8" AND 1/2" ARE MORE COMMONLY USED AND ARE QUITE HEAVY ENOUGH FOR ANY ORDINARY WORK.

FLASHING IS SOMETIMES PUT IN (ONLY THE BEST WORK) AT SIDES OF WINDOWS, BUT IT SHOULD BE IN SEPARATE PIECES LAID A LONG SINGLE STRIP, IF USED AT ALL, AND OVERLAPPING WITH EACH CLAP, BOARD OR COURSE OF SHINGLES.

SHINGLES
FLASHING

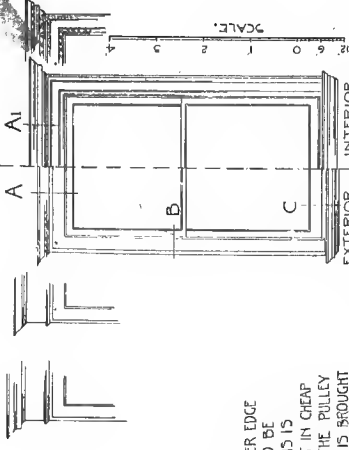
SECTION B.



BY INSERTING A 3/8" PIECE HERE ADDITIONAL SPACE IS GIVEN SO THAT IT IS POSSIBLE TO HAVE BOTH BLINDS AND MOSQUITO SCREEN OUTSIDE OF SASH. THE SPACE IS STILL SO NARROW, HOWEVER, THAT THE SCREEN WOULD EITHER HAVE TO BE CUT OUT A LITTLE BIT AT THE BOTTOM OR SLIGHTLY RAISED FROM SILL TO GIVE ROOM FOR BLIND CATCHES WHEN BLINDS ARE CLOSED.

IN THIS DETAIL EXTRA WIDTH IS GIVEN TO THE PULLEY STILE BY SETTING CASING OUTSIDE OF SHEATHING, AND IN THIS WAY MAKING ANGLE ROOM FOR BOTH OUTSIDE BLINDS AND SCREENS. THE SAME THING COULD BE ACCOMPLISHED MORE SATISFACTORILY BY USING 6" STUDS FOR WALL, AND CASING OUTSIDE IN THE ORDINARY WAY. USING 1 1/2" SASH INSTEAD OF 1 3/4" WOULD ALSO ACCOMPLISH THE SAME THING.

WHERE THE STOP BEAD DOES NOT LAP OVER EDGE OF ARCHITRAVE A FINISHING PIECE SHOULD BE INSERTED AT THE ANGLE AS SHOWN. THIS IS QUITE ESSENTIAL IN ALL GOOD WORK, BUT IN CHEAP WORK THAT IS TO BE PAINTED THE PULLEY STILE OR THE GROUND CASING IS BROUGHT CLEAR OUT TO THE ANGLE AND ALLOWED TO SHOW AS FINISHED WORK.



ELEVATION'S SHOWING APPLICATION OF DETAILS.

BOTH INTERIOR AND EXTERIOR DETAILS MAY BE INDEFINITELY ELABORATED, AS INDICATED BY SMALL SKETCHES ABOVE.

DETAILS OF DOUBLE HUNG WINDOWS IN FRAME WALLS.

SCALE FOR DETAILS - 3" TO 12".

SECTION C.

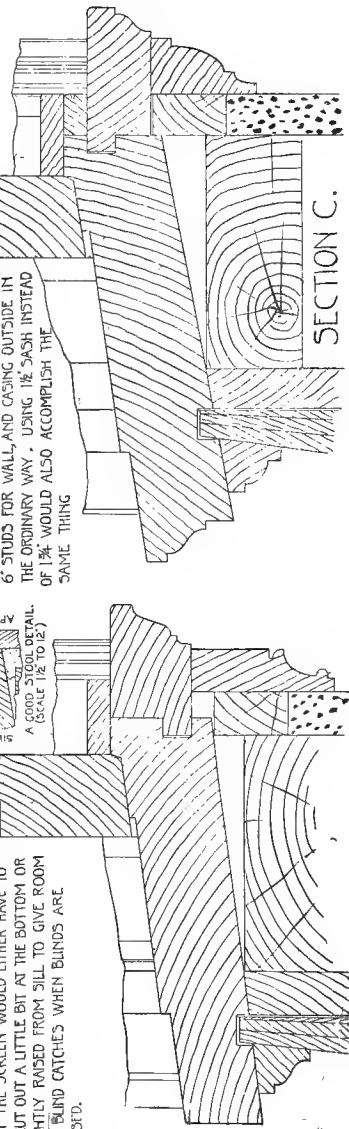
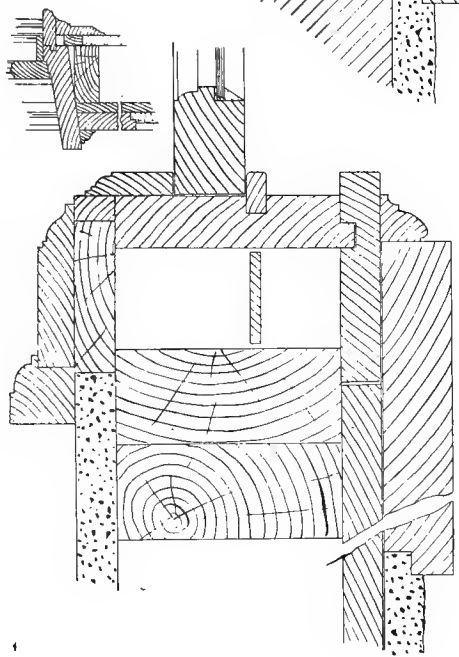
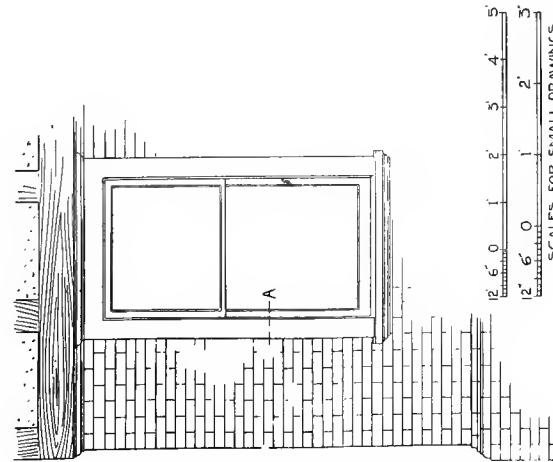
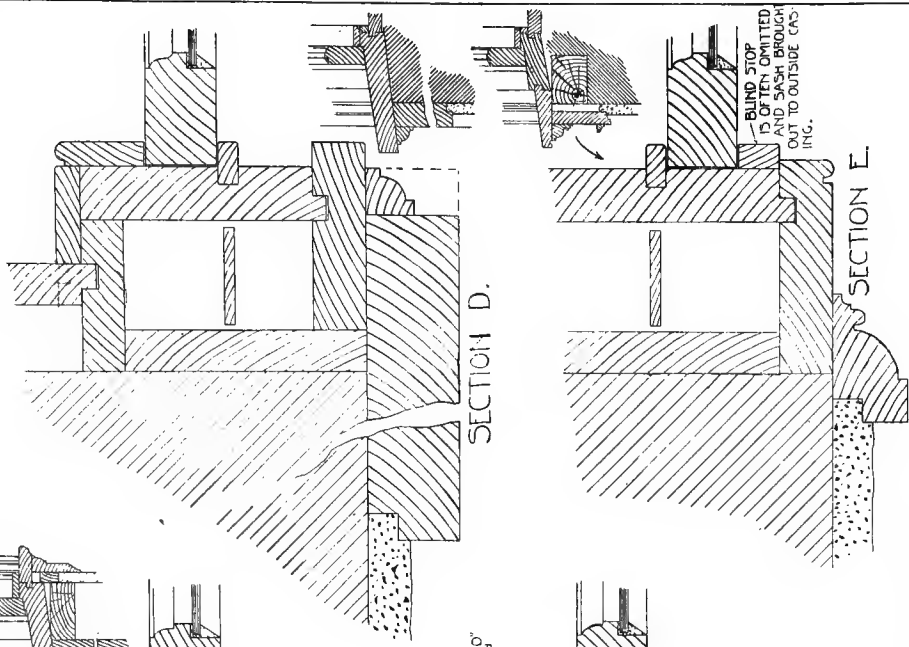


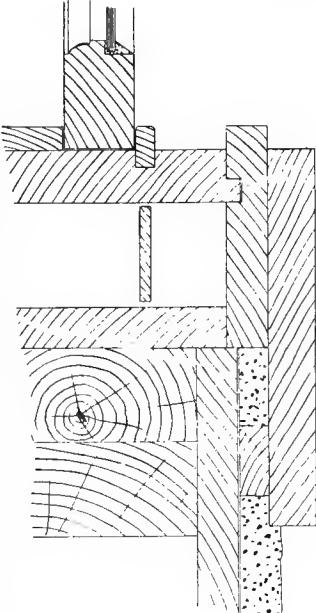
PLATE IX



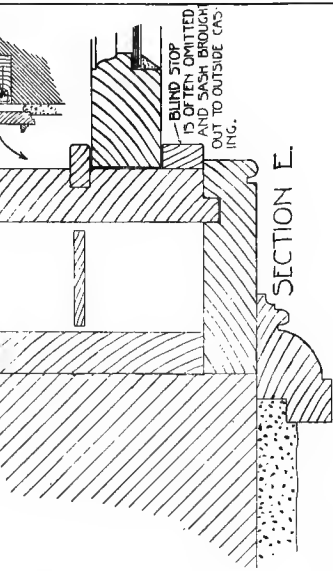
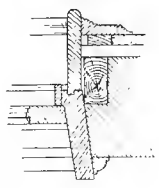
SECTION B.
SCALE FOR DETAILS - 3" TO 12"



SECTION D.



SECTION C.



SECTION E.

NOTES.

THE SMALL SCALE ELEVATION ABOVE AND DETAIL SECTION A BELOW SHOW A VERY GOOD AND COMPARATIVELY INEXPENSIVE CONSTRUCTION FOR WINDOWS IN THIN BRICK WALLS, OR FRAME WALLS VENERED WITH BRICK. THE USUAL CONSTRUCTION, HOWEVER, FOR WINDOWS IN WALLS OF THIS KIND WOULD BE SOME MODIFICATION OF THE DETAILS SHOWN ON PLATE IV.

SECTIONS B AND C SHOW TWO DETAILS FOR WINDOWS IN HALF-TIMBER WORK ON A FRAME HOUSE, AS THERE ARE SO MANY WAYS OF FLYING THE TIMBERS AND PLASTER, THESE DETAILS ARE GIVEN ONLY AS SUGGESTIONS AND WOULD HAVE TO BE MODIFIED TO SUIT INDIVIDUAL CASES. THE PLASTER (ROUGH CAST OR PEBBLE DASH) SHOWN IN DETAILS B AND C IS PUT ON METAL LATH FASTENED DIRECTLY TO THE OUTSIDE SHEATHING, WHICH IS FIRST COVERED WITH HEAVY ROSIN-SIZED BUILDING PAPER. THE METAL LATH SHOULD, OF COURSE, BE HELD SLIGHTLY FREE FROM THE FACE OF THE SHEATHING BY STIFFENERS IN THE LATH OR BY THIN FURRING STRIPS. SECTION D SHOWS THE SAME CONSTRUCTION APPLIED TO A MASONRY WALL, THOUGH IN THIS CASE THE PLASTER IS APPLIED DIRECTLY TO THE WALL WITHOUT LATHING OF ANY KIND.

SECTION E IS FOR A WINDOW IN A BRICK WALL PLASTERED ON THE OUTSIDE. WINDOWS IN MASONRY WALLS WITH OUTSIDE PLASTER ARE SOMETIMES MADE SIMILAR TO DETAILS ON PLATE IV, IN WHICH CASE THE PLASTER IS RETURNED ON THE JAMBS BEHIND THE STAFF BEAD.

SMALL SCALE SECTION A ARE GIVEN AS SUGGESTIONS FOR SILLS OF WINDOWS DETAILED AS ABOVE. FOR FURTHER SUGGESTIONS, SEE WOOD SILLS ON PLATES VI, VII, IX.

MISCELLANEOUS DETAILS FOR DOUBLE HUNG WINDOWS.

FOR SHAM HALF-TIMBER CONSTRUCTION SEE PLATE XXVIII.

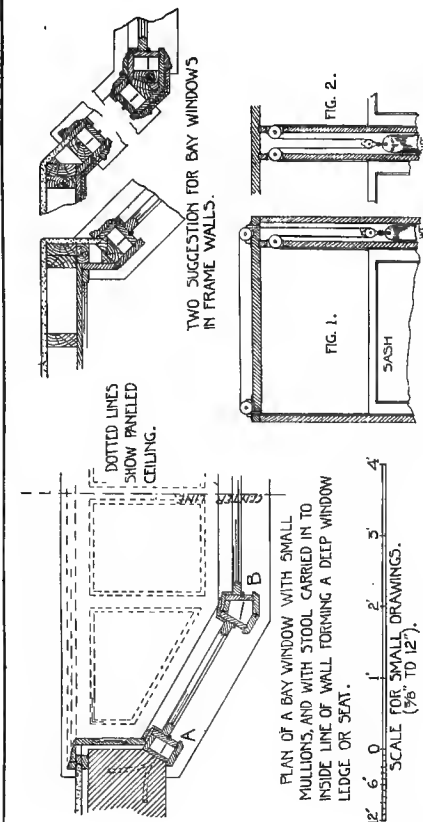


FIG. 1 IS A SECTION SHOWING HOW A SASH CAN BE EVENLY COUNTERBALANCED WHEN IT MAY BE POSSIBLE TO HAVE A WEIGHT BOX ONLY AT ONE SIDE. THIS IS NOT A VERY SATISFACTORY SCHEME AND IS TO BE USED ONLY IN CASE OF NECESSITY.

FIG. 2 SHOWS THE METHOD OF HANGING TWO SASHES TO ONE WEIGHT AS REQUIRED BY DETAIL SECTION, B.

NOTE. SINCE THE ABOVE DRAWINGS WERE MADE SEVERAL GOOD OVERHEAD AND MULLION PULLEYS HAVE BEEN PUT ON THE MARKET.

DETAILS OF BAY WINDOWS WITH COUNTERBALANCED SASHES.

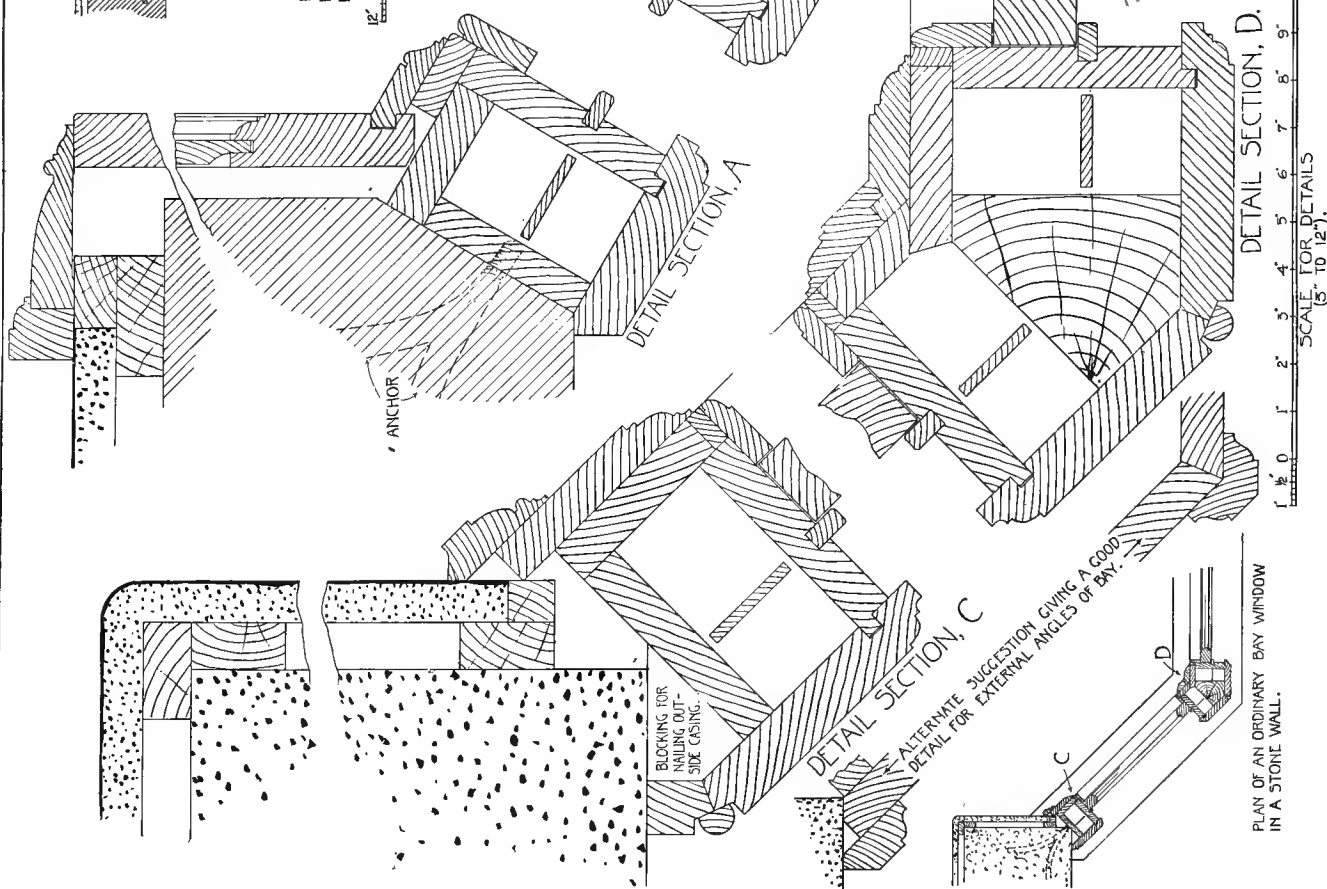
THE DRAWINGS ON THIS PLATE SHOW ONLY A FEW OF THE MANY WAYS OF DETAILING BAY WINDOWS, BUT WITH THE PRINCIPLES HERE GIVEN THE STUDENT CAN MODIFY AND ELABORATE TO ANY EXTENT THAT HIS DESIGN MAY REQUIRE. THE MULLIONS MAY BE TREATED AS HEAVY, MOLDED MEMBERS, OR THEY MAY, IN MASONRY BUILDINGS, HAVE STONE MULLIONS ON THE OUTSIDE (SEE PLATE VII).

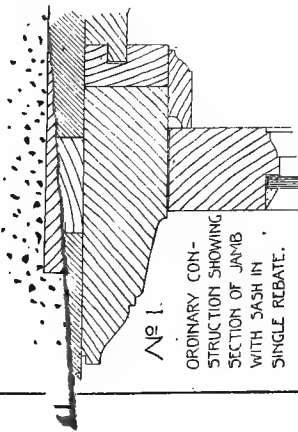
A BAY WINDOW MAY BE CARRIED TO THE FLOOR AND CEILING OF A ROOM; OR IT MAY FINISH ON THE INSIDE WALL OF THE ROOM AS ONE LARGE WINDOW WITH A BROAD STOOL, OR SEAT, AND WIDE HEAD CASING, THE HEAD CASING OFTEN BEING FINISHED AS A PANELED CEILING.

THE JAMBS IN FINE WORK ARE OFTEN FINISHED WITH PLASTER CARRYING AN ARCH OR AN ENTABLATURE AT THE CEILING OF THE BAY, BELOW THE CEILING OF THE ROOM. PLAIN JAMBS MAY BE PANELED IN WOOD, OR PLASTERED, ACCORDING TO COST OF WORK.

DETAILS C AND D SHOW PLAIN ORDINARY CONSTRUCTION; A AND B SHOW CONSTRUCTION WHERE THE DESIGN MAY REQUIRE VERY SMALL MULLIONS. IN B LEAD WEIGHTS, MADE TO FIT THE BOX, ARE EACH HUNG TO TWO SASHES AS IN FIG. 2, ABOVE.

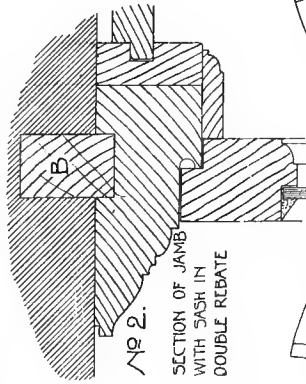
DETAILS OF HEADS AND SILLS ARE NOT SHOWN HERE, BECAUSE, IF SIMPLE IN CONSTRUCTION THEY ARE IN NO WAY DIFFERENT FROM THE HEADS AND SILLS OF PLAIN WINDOWS; AND IF MORE ELABORATE, THE ELABORATION IS A MATTER OF DESIGN RATHER THAN OF CONSTRUCTION. THE SIZE, PROJECTION, ANGLES, ETC., ARE ALL VARIABLE TO SUIT THE REQUIREMENTS OF ANY GIVEN PROBLEM. BAYS PROJECTING FROM MASONRY WALLS SHOULD ALWAYS BE WELL ANCHORED. IRON JAMB SCREW ANCHORS ARE COMMONLY USED.





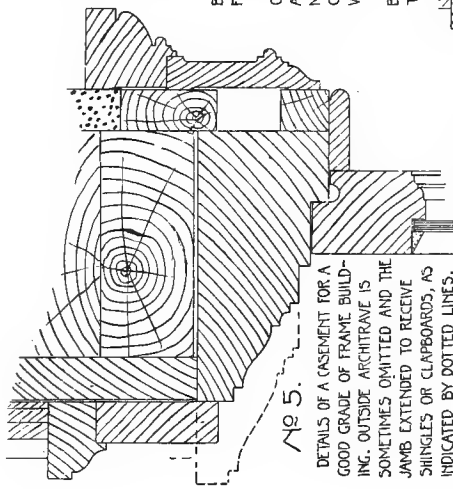
№ 1.

ORDINARY CONSTRUCTION SHOWING SECTION OF JAMB WITH SASH IN SINGLE REBATE.



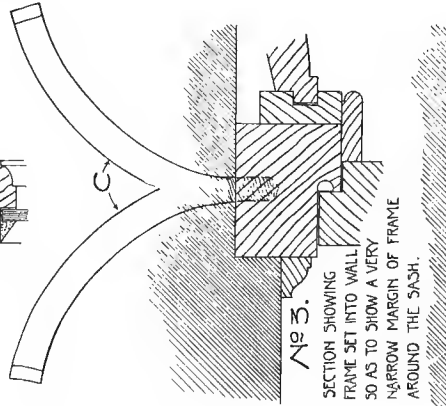
№ 2.

SECTION OF JAMB WITH SASH IN DOUBLE REBATE



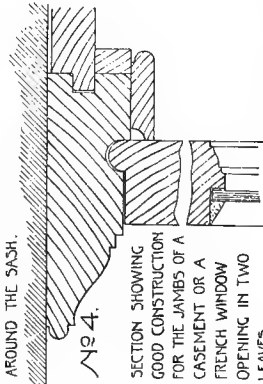
№ 5.

DETAILS OF A CASEMENT FOR A GOOD GRADE OF FRAME BUILDING. OUTSIDE ARCHITRAVE IS SOMETIMES OMITTED AND THE JAMB EXTENDED TO RECEIVE SHINGLES OR CLAPBOARDS, AS INDICATED BY DOTTED LINES.



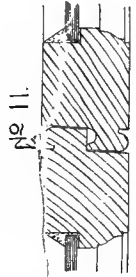
№ 3.

SECTION SHOWING FRAME SET INTO WALL SO AS TO SHOW A VERY NARROW MARGIN OF FRAME AROUND THE SASH.

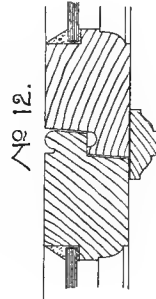


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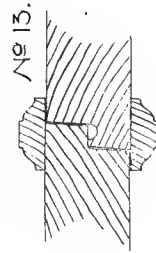
SECTION SHOWING GOOD CONSTRUCTION FOR THE JAMBS OF A CASEMENT OR A FRENCH WINDOW OPENING IN TWO LEAVES



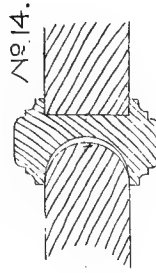
№ 11.



№ 12.



№ 13.



№ 14.

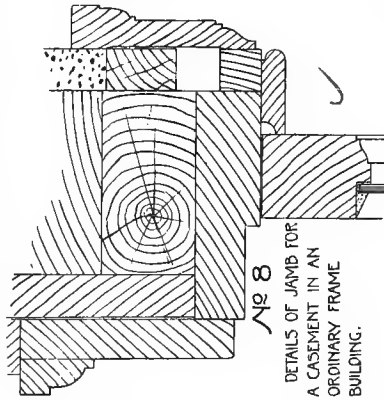
NOTES.

THE ONE GREAT OBJECTION TO CASEMENT WINDOWS IS THAT IT IS VERY DIFFICULT TO MAKE THEM SECURE AGAINST WIND AND RAIN. THIS IS LESS DIFFICULT WITH CASEMENTS OPENING OUTWARD THAN WITH THOSE OPENING INWARD. WHERE THE CHARACTER OF THE WORK WILL ADMIT, IT IS BEST TO SET SASHES IN A DOUBLE REBATE; AND THERE SHOULD ALWAYS BE A GROOVE AT THE SIDE, EITHER IN JAMB OR SASH, SO THAT WATER BEATING IN WILL BE CARRIED DOWN TO THE SILL. THE TROUBLE WITH A DOUBLE REBATE IS THAT IT IS HARD TO GET A LOCK THAT IS BOTH SMALL ENOUGH FOR THE SASH AND HAS THE KEY OR TURN FAR ENOUGH BACK TO COME INSIDE OF THE STOP BEAD: HENCE CARE SHOULD BE TAKEN TO MAKE SASH DEEP ENOUGH AND REBATES NOT TOO DEEP FOR LOCKS.

SASHES FOR CASEMENTS REQUIRE TO BE HEAVIER THAN FOR COUNTERBALANCED WINDOWS, BECAUSE, BEING HINGED AT SIDES (USUALLY), THERE IS MORE STRAIN ON THEM. THE SIZES SHOWN HERE ARE SUITABLE FOR SMALL SASHES ONLY.

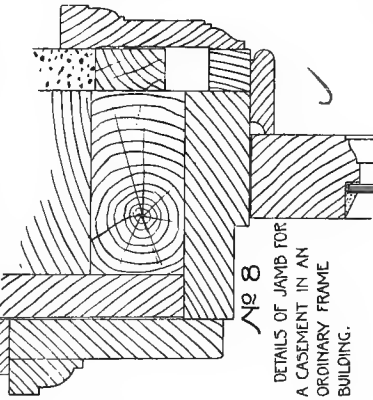
SECTIONS 1, 2, 3, & 4 ARE FOR CASEMENTS IN MASONRY WALLS, AND A, B, & C SHOW VARIOUS METHODS OF FASTENING THEM INTO WALLS, C BEING AN IRON JAMB-SCREW ANCHOR. SECTIONS 5 TO 10 INCLUSIVE ARE DETAILS FOR CASEMENTS IN FRAME WALLS. SECTIONS 11, 12, 13, & 14 ARE MEETING STILES FOR CASEMENTS OR FRENCH WINDOWS HUNG IN TWO LEAVES. SECTION 14 REQUIRES THAT BOTH SASHES BE OPENED AND CLOSED TOGETHER, AND THE CRESCENT SHAPED SPACE IS NECESSARY TO ALLOW FOR THE SLIGHT THROW FORWARD GIVEN BY THE HINGES WHICH TURN ON A CENTER OUTSIDE OF THE SASHES.

INTERIOR AND EXTERIOR DETAILS MAY BE VARIED INDEFINITELY TO SUIT THE GENERAL DESIGN. SILLS MAY BE THE SAME AS SHOWN ON OTHER PLATES OF THIS SERIES, THERE BEING NO ESSENTIAL DIFFERENCE BETWEEN SILLS FOR DOUBLE HUNG WINDOWS AND FOR OUTWARD OPENING CASEMENTS.



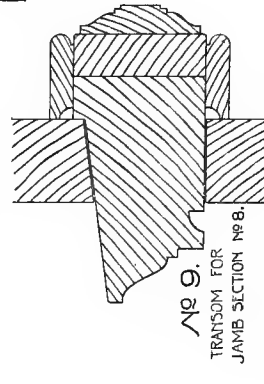
№ 8

DETAILS OF JAMB FOR A CASEMENT IN AN ORDINARY FRAME BUILDING.



№ 10.

JAMB FOR A CASEMENT IN CHEAP WORK.



№ 9.

TRANSOM FOR JAMB SECTION № 8.

DETAILS OF CASEMENT WINDOWS OPENING OUTWARD.

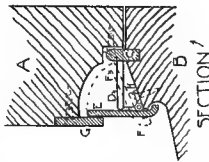
DETAILS AND DESCRIPTION FROM THE
"DICTIONARY OF ARCHITECTURE."
ISSUED BY THE ARCHITECTURAL PUBLICATION
SOCIETY, LONDON, ENG.

"A NEW KIND OF WATER BAR FOR FRENCH
CASEMENTS POSSESSING MANY ADVANTAGES, AND
WHICH HAS PROVED SUCCESSFUL IN USE FOR SOME
YEARS. IT IS ALSO APPLICABLE TO EXTERNAL DOORS.
AS WHEN THE WATER BAR IS FORCED DOWN BY THE
COVER FILLET, THE APPARATUS OFFERS NO IMPEDIMENT
TO THE FOOT, AND WHEN RAISED IS ABSOLUTELY
WEATHER-TIGHT. A SECTION OF A 2½" CASEMENT.

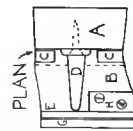
B. SILL. C. METAL BEAD, WITH OPENINGS FOR AN ARM, D,
TO MOVE THROUGH, AS SHOWN IN PLAN. D. METAL ARM
FIXED TO CASEMENT (ONE IN THE CENTER OF EACH CASEMENT),
TO LIFT THE WATER BAR. E. IN CLOSING THE CASEMENT,
E, METAL WATER BAR, HINGED AT H, LIFTED BY THE ARM,
D, AND FORCED BY IT AGAINST G. A METAL COVER
FILLET FASTENED TO THE OUTSIDE OF THE CASEMENT.

F. SHOWS THE POSITION OF THE WATER BAR WHEN THE CASEMENT IS OPEN, TO
ALLOW THE COVER FILLET, G, TO PASS OVER IT. THIS ARRANGEMENT IS FOUND
IN PRACTICE TO BE MOST EFFICIENT, AND TO KEEP FOR A LONG TIME IN PERFECT
WORKING ORDER.

IT WOULD SEEM THAT THE ABOVE DEVICE MIGHT BE
IMPROVED AND STRENGTHENED BY MAKING THE BEAD
C A PART OF A METAL PLATE COVERING THE TOP OF
THE WOOD SILL, AS SHOWN IN THE ADJOINING
SKETCH.



SECTION A

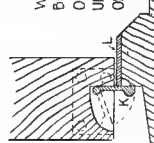


PLAN



SKETCH

THIS DRAWING SHOWS A SECTION OF A
WEATHER STRIP MADE BY ENOCH ROBINSON,
BOSTON, MASS. WHEN THE CASEMENT IS
OPENED THE WATER BAR K IS LIFTED AND KEPT
UP BY THE PLATE L WHICH RUNS THE FULL LENGTH
OF THE SILL. THIS COMMENDS ITSELF AS AN
EXCELLENT DEVICE WHERE THE WINDOW OR
DOOR DOES NOT OPEN FAR ENOUGH TO
THROW THE WATER BAR OFF THE PLATE AT THE HINGE SIDE OF THE SASH.
THIS DIFFICULTY COULD, HOWEVER, BE EASILY MET BY EXTENDING THE
SILL PLATE AT THAT END IN SUCH A WAY AS TO FORM A TRACK TO HOLD
THE BAR UP THROUGH ANY ARC IN WHICH IT MAY BE DESIRABLE TO
SWING THE SASH OR DOOR.



SECTION

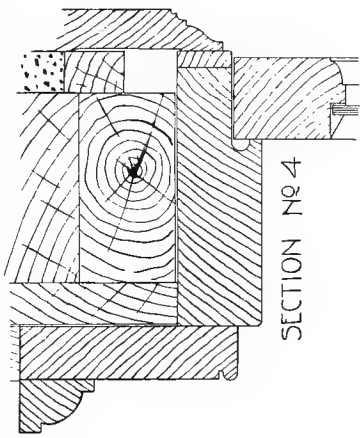
DETAILS OF CASEMENT WINDOWS OPENING IN.

SCALE (5" TO 12").

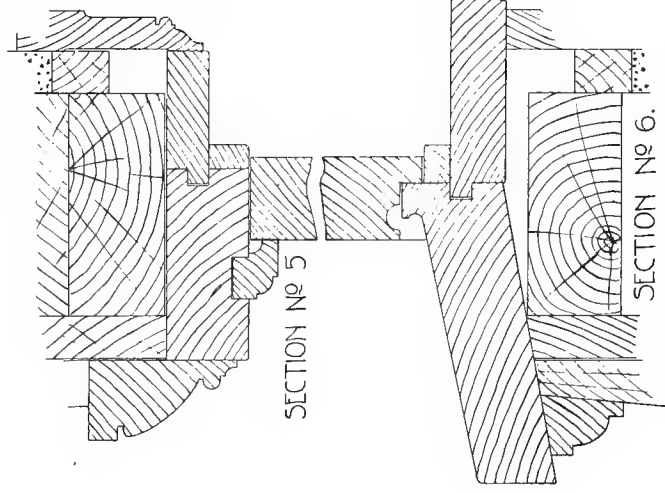
READ NOTES ON PLATE XII. SEE ALSO PLATES XIV, XV, & XVI.

PLATE XIII

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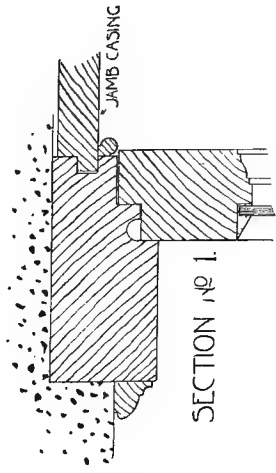


SECTION No 4

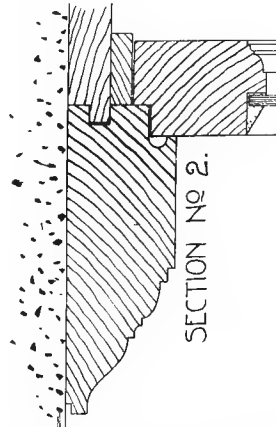


SECTION No 5

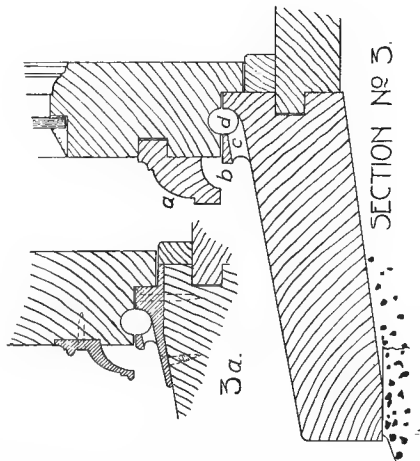
SECTION No 6



SECTION No 1



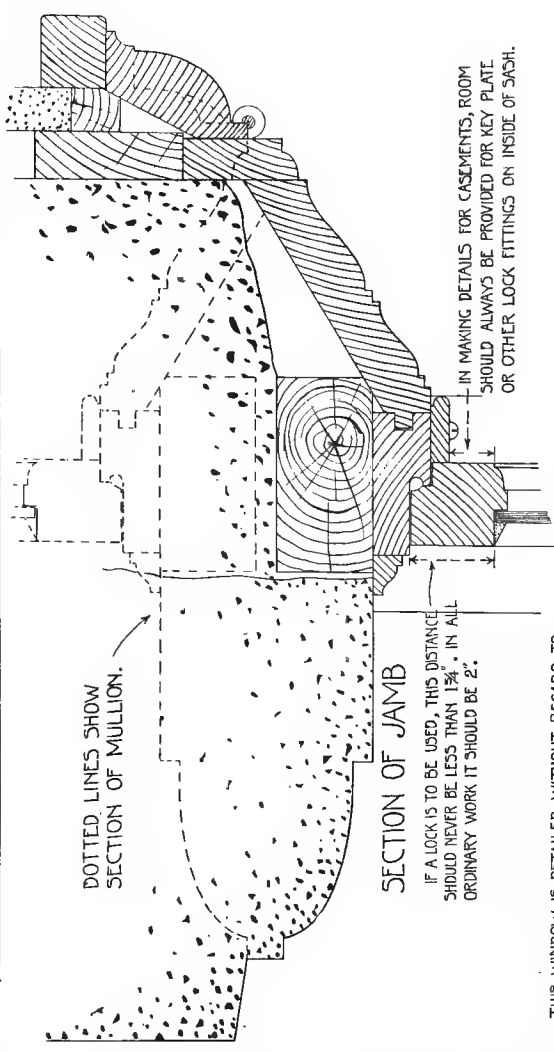
SECTION No 2



SECTION No 3

NOTES. THE SPECIAL DIFFICULTY ALWAYS MET WITH IN CASEMENTS OPENING IN IS THAT IT IS NEXT TO IMPOSSIBLE TO MAKE
SILLS THAT ARE PERFECTLY WEATHER-PROOF. SECTIONS 1, 2, 4, AND 5 SHOW VARIOUS JAMB SECTIONS ADAPTABLE TO DIFFERENT KINDS
OF WORK. SILL SECTION No 6 IS A GOOD ENOUGH FORM FOR CHEAP WORK OR WHERE WINDOWS ARE WELL SHELTERED. No 3 IS
A MORE ELABORATE AND CAREFULLY STUDIED SECTION: THE DRIP MOLDING α CARRIES THE WATER OUT AND AWAY FROM THE JOINT AT
THE BOTTOM OF SASH, THE RAISED LIP β ON SILL, TENDS TO TURN BACK WATER THAT THE WIND WOULD OTHERWISE DRIVE IN UNDER THE
SASH, WHILE ANY WATER THAT MAY FINALLY GET INSIDE OF THIS POINT IS COLLECTED IN THE GROOVE γ AND CARRIED OUT THROUGH THE
HOLES c WHICH ARE $\frac{3}{16}$ " IN DIAMETER AND ABOUT 5" OR 6" APART. IT WOULD BE AN IMPROVEMENT IF THE ESSENTIAL FEATURES OF No 3
COULD BE MADE IN STEEL OR BRONZE AS SUGGESTED BY SECTION 3a.
IN ENGLAND CASEMENTS ARE FREQUENTLY MADE WITH FRAMES AND SASHES OF IRON, AND THE FORMS OF CONSTRUCTION USED TO
EXCLUDE WIND AND RAIN ARE SOMETIMES VERY ELABORATE.

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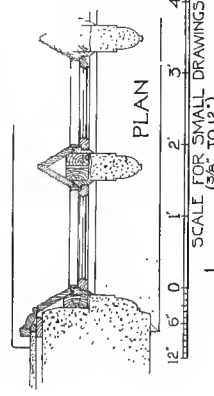
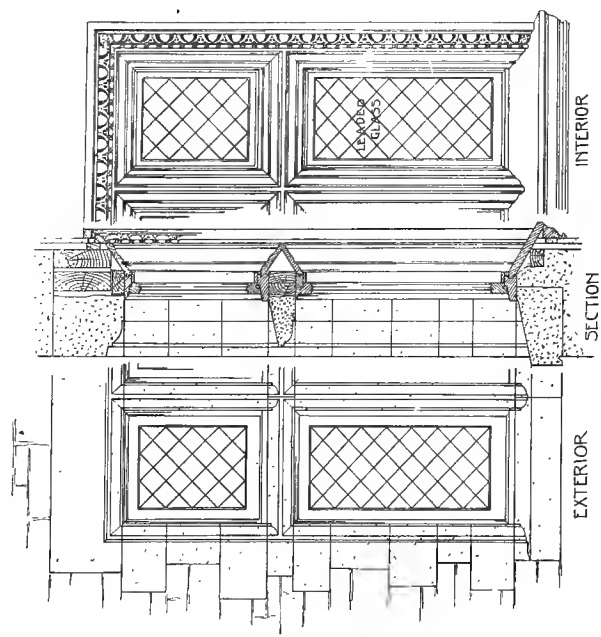
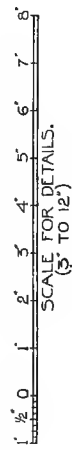
IN MAKING DETAILS FOR CASEMENTS, ROOM SHOULD ALWAYS BE PROVIDED FOR KEY PLATE OR OTHER LOCK FITTINGS ON INSIDE OF SASH.

THE TOP OF TRANSOM MIGHT BE FINISHED PERFECTLY PLAIN AS INDICATED BY DOTTED LINE.

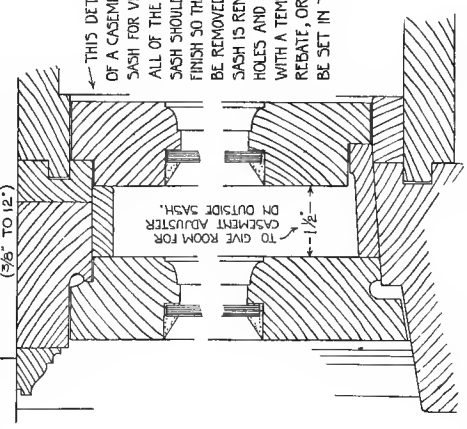
THIS WINDOW IS DETAILED WITHOUT REGARD TO EXPENSE, THE PRIMARY OBJECT BEING TO SHOW THE GENERAL TREATMENT OF MULLIONS AND TRANSOMS. THE DETAILS ALSO SHOW THE WOOD FRAME AND SASH REDUCED TO A MINIMUM SO AS TO GIVE THE GREATEST POSSIBLE GLASS AREA IN A GIVEN MASONRY OPENING. WITH IRON FRAMES AND SASHES, AS USED IN SOME EUROPEAN WORK, THE COMPARATIVE GLASS AREA COULD BE STILL FURTHER INCREASED. STONE TRANSOMS AND MULLIONS ARE USUALLY MADE FROM 4 1/2\"/>

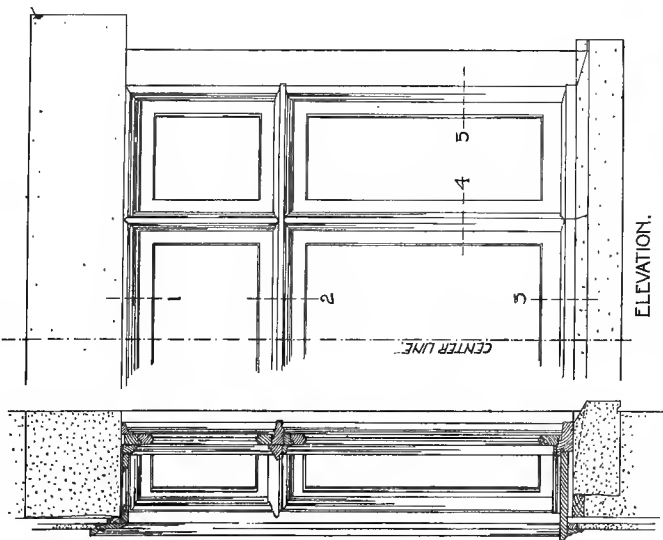
TO 6\"/>

DETAILS OF A CASEMENT WINDOW WITH MULLIONS AND TRANSOMS, AND WITH SASHES OPENING OUTWARD.



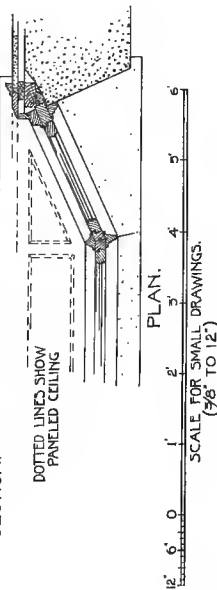
THIS DETAIL SHOWS SECTIONS OF A CASEMENT WINDOW WITH DOUBLE SASH FOR VERY EXPOSED SITUATIONS. ALL OF THE FINISH INSIDE OF THE OUTER SASH SHOULD CORRESPOND WITH INSIDE FINISH SO THAT THE INNER SASH MAY BE REMOVED IN SUMMER. WHEN THIS SASH IS REMOVED THE HINGE SCREW HOLES AND LOCK PLATE CAN BE COVERED WITH A TEMPORARY STRIP SET IN THE REBATE, OR A MOSQUITO SCREEN MAY BE SET IN THE PLACE OF THE SASH.





SECTION.

ELEVATION.

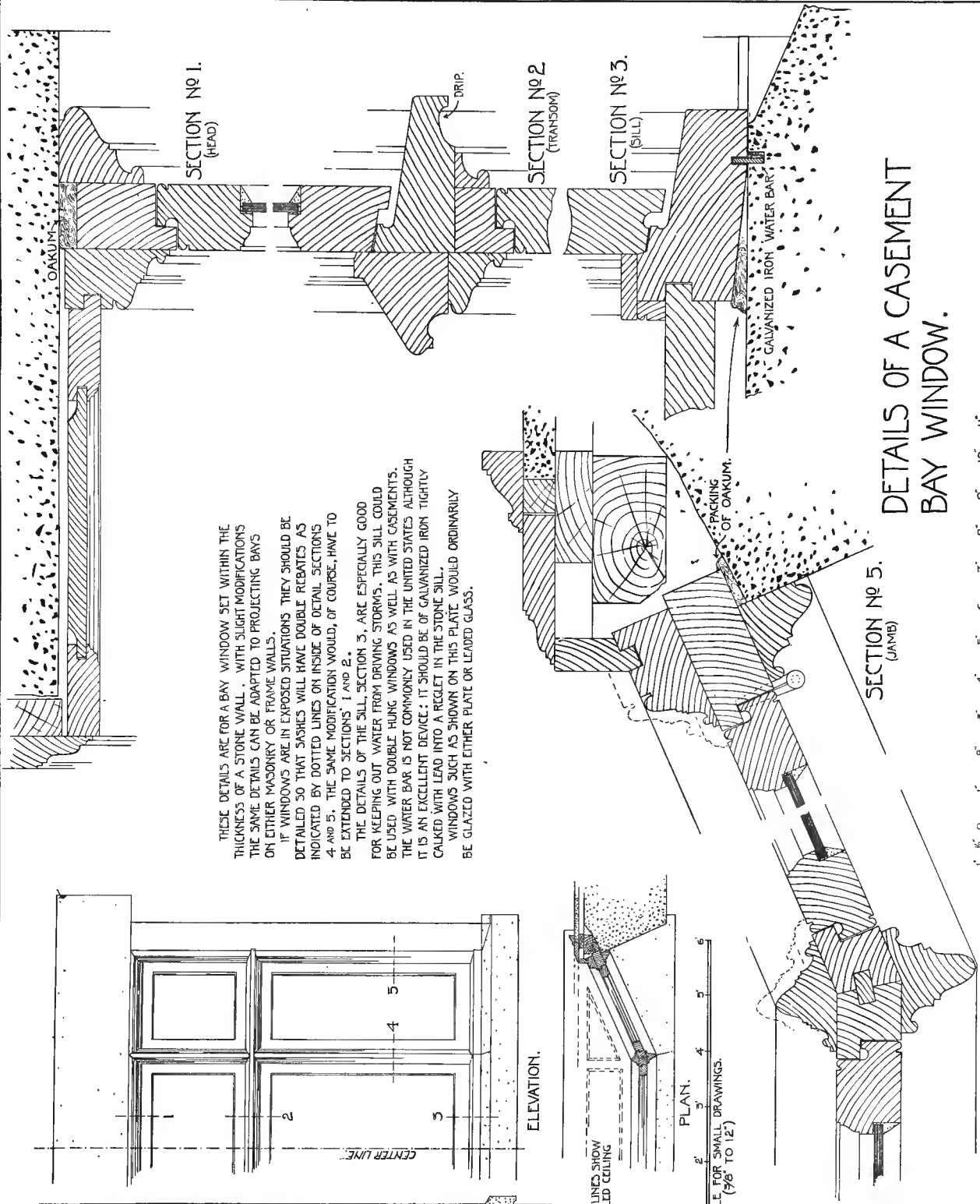


PLAN.

THESE DETAILS ARE FOR A BAY WINDOW SET WITHIN THE THICKNESS OF A STONE WALL. WITH SLIGHT MODIFICATIONS THE SAME DETAILS CAN BE ADAPTED TO PROJECTING BAYS ON OTHER MASONRY OR FRAME WALLS.

IF WINDOWS ARE IN EXPOSED SITUATIONS THEY SHOULD BE DETAILED SO THAT SASHES WILL HAVE DOUBLE REBATES AS INDICATED BY DOTTED LINES ON INSIDE OF DETAIL SECTIONS 4 AND 5. THE SAME MODIFICATION WOULD, OF COURSE, HAVE TO BE EXTENDED TO SECTIONS 1 AND 2.

THE DETAILS OF THE SILL, SECTION 3, ARE ESPECIALLY GOOD FOR KEEPING OUT WATER FROM DRIVING STORMS. THIS SILL COULD BE USED WITH DOUBLE HUNG WINDOWS AS WELL AS WITH CASEMENTS. THE WATER BAR IS NOT COMMONLY USED IN THE UNITED STATES ALTHOUGH IT IS AN EXCELLENT DEVICE: IT SHOULD BE OF GALVANIZED IRON TIGHTLY CALKED WITH LEAD INTO A REGLET IN THE STONE SILL. WINDOWS SUCH AS SHOWN ON THIS PLATE WOULD ORDINARILY BE GLAZED WITH EITHER PLATE OR LEADED GLASS.



SECTION NO 1.
(HEAD)

SECTION NO 2
(TRANSOM)

SECTION NO 3.
(SILL)

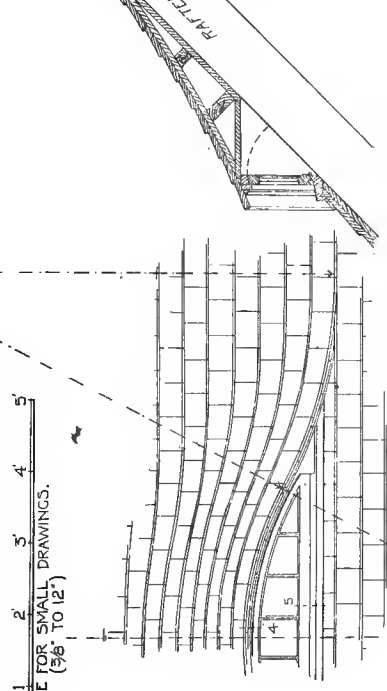
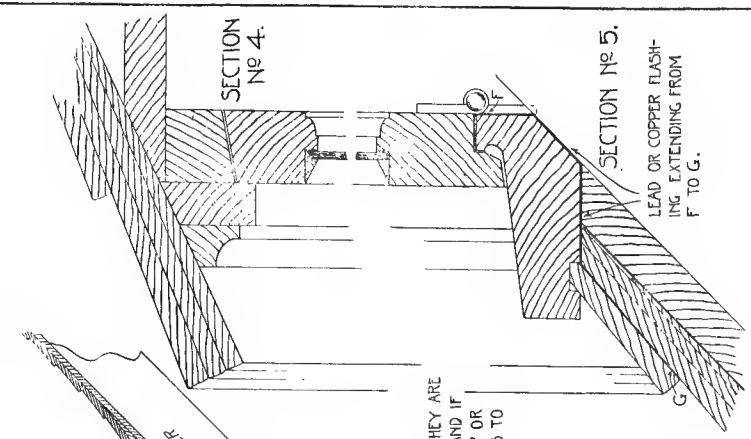
SECTION NO 5.
(JAMB)

SECTION NO 4.
(MULLION)

DETAILS OF A CASEMENT BAY WINDOW.

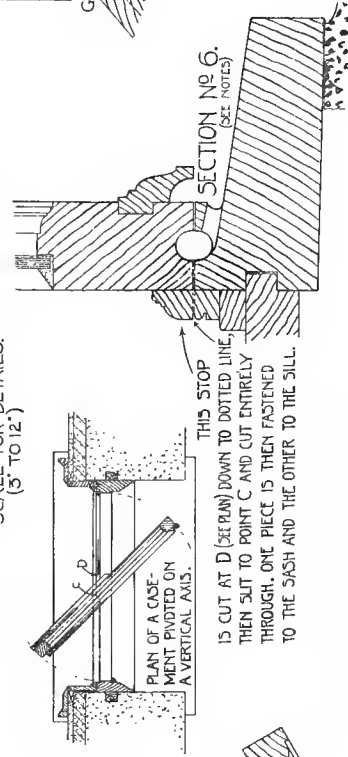
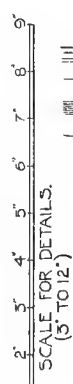
cam.

DETAILS OF PIVOTED CASEMENTS AND EYEBROW DORMERS.



DETAILS OF AN EYEBROW WINDOW.

AS ORDINARILY CONSTRUCTED, THESE WINDOWS ARE VERY UGLY; BUT IF THEY ARE CAREFULLY PROPORTIONED SO AS TO AVOID TOO MUCH HEIGHT AT THE MIDDLE, AND IF THE REVERSE CURVE IS CARRIED OUT TO DIE INTO THE ROOF WITHOUT A HUMP OR BREAK, THEY CAN BE MADE TO LOOK VERY WELL. THEIR ORDINARY USE IS TO LIGHT AND VENTILATE UNFINISHED ATTICS.

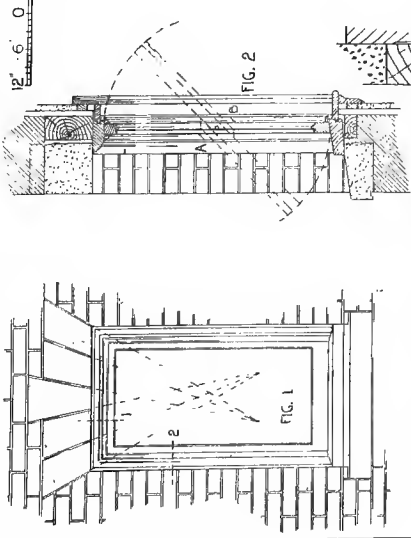


NOTES AND EXPLANATIONS.

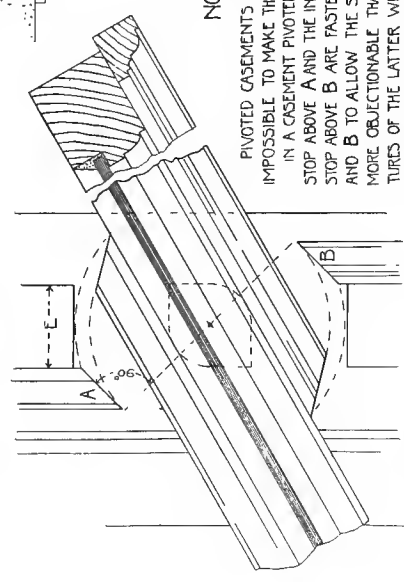
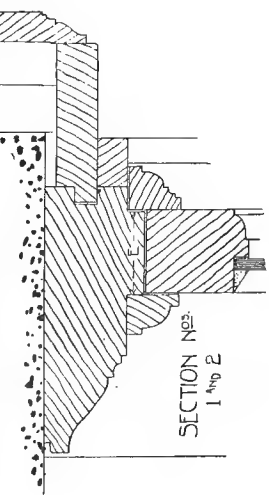
PIVOTED CASEMENTS SHOULD NOT BE USED IN POSITIONS EXPOSED TO SEVERE STORMS OR COLD, AS IT IS PRACTICALLY IMPOSSIBLE TO MAKE THEM WEATHER-PROOF, ESPECIALLY ABOUT THE PIVOTS, IN WOODEN CONSTRUCTION. IN A CASEMENT PIVOTED ON THE HORIZONTAL AXIS, FIGS. 1 AND 2, THE STOP BEADS ARE CUT AT A AND B, AND THE OUTSIDE STOP ABOVE A AND THE INSIDE STOP BELOW B ARE FASTENED TO THE FRAME; WHILE THE OUTSIDE STOP BELOW A AND THE INSIDE STOP ABOVE B ARE FASTENED TO THE SASH, THE PROJECTING PART E OF FRAME BEING CUT AWAY BETWEEN POINTS A AND B TO ALLOW THE SASH TO TURN. - SEE DETAIL SECTION No 5. CASEMENTS PIVOTED ON A VERTICAL AXIS ARE STILL MORE OBJECTIONABLE THAN THOSE PIVOTED ON A HORIZONTAL AXIS, BECAUSE THEY PRESENT ALL OF THE OBJECTIONABLE FEATURES OF THE LATTER WITH THE ADDITIONAL DIFFICULTY OF SILLS THAT MUST BE DESIGNED TO KEEP OUT WEATHER AND AT THE SAME TIME PERMIT ONE HALF OF THE SASH TO OPEN IN AND THE OTHER HALF TO OPEN OUT. SECTION No 6 SHOWS A SILL DESIGNED FOR THIS PURPOSE; THE OTHER DETAILS FOR THIS WINDOW WOULD BE IN ALL ESSENTIALS THE SAME AS FOR THOSE PIVOTED ON A HORIZONTAL AXIS.

CIRCULAR OR ELLIPTICAL WINDOWS ARE LIKELY TO BE TROUBLESOME, SINCE IF PIVOTED THEY ARE NOT STORM PROOF, AND IF STATIONARY ARE OFTEN DIFFICULT OF ACCESS FOR CLEANING ON THE OUTSIDE. MOREOVER, IT IS HARD TO BUILD THE LOWER HALF ON THE OUTSIDE SO THAT STORM WATER WILL BE CARRIED OFF AS BY THE SILL AND DRIP OF AN ORDINARY WINDOW.

SEE NOTES ON PLATES XII AND XIII

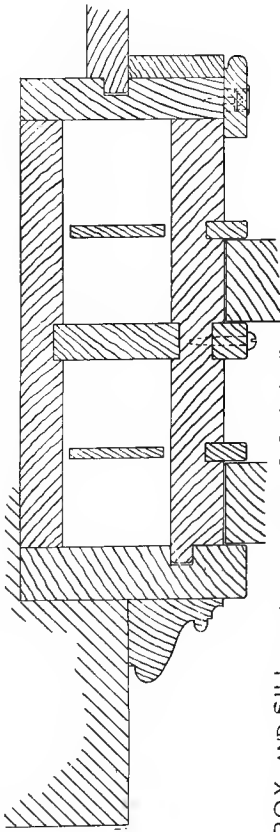


ELEVATION AND SECTION OF A CASEMENT PIVOTED ON A HORIZONTAL AXIS.

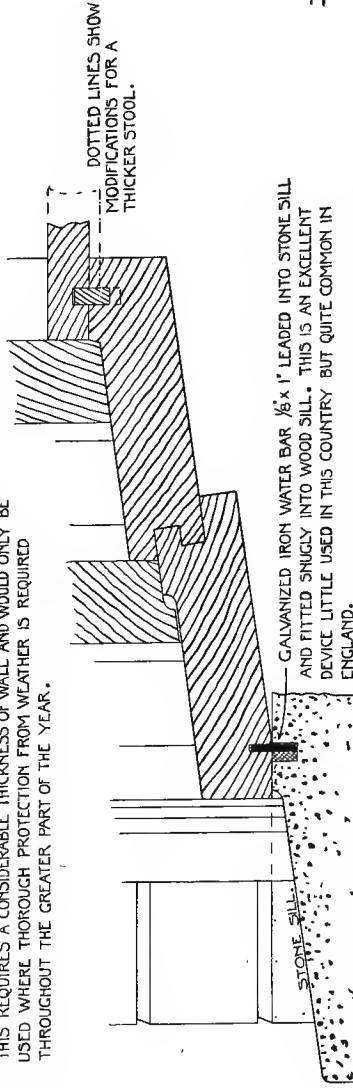


SECTION No 3 (SEE NOTES)

ORDINARY WINDOW WITH STORM SASH.

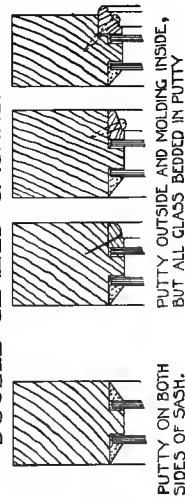


BOX AND SILL FOR A DOUBLE SET OF SLIDING SASHES. THIS REQUIRES A CONSIDERABLE THICKNESS OF WALL AND WOULD ONLY BE USED WHERE THOROUGH PROTECTION FROM WEATHER IS REQUIRED THROUGHOUT THE GREATER PART OF THE YEAR.



1 1/2 0 1 2 3 4 5 6 7 8 9 10 11
SCALE - 3" TO 12."

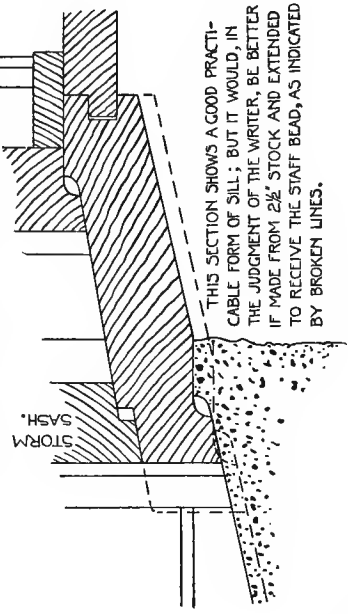
DOUBLE GLAZED SASHES.



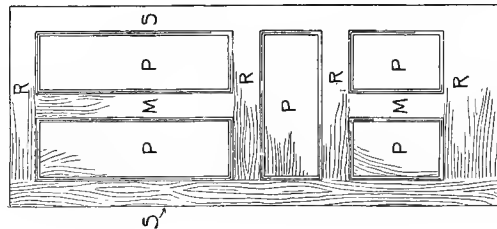
SASHES ARE SOMETIMES DOUBLE GLAZED AS A PROTECTION AGAINST COLD; BUT THIS IS NOT ADVISABLE WITH CLEAR GLASS, AS FINE DUST IS ALMOST SURE TO WORK IN BETWEEN INNER AND OUTER PANE, THE GLASS "SWEATS" MORE OR LESS IN COLD WEATHER, AND BETWEEN DUST AND MOISTURE A THIN FILM GATHERS ON THE INNER SURFACES AND DESTROYS THE CLEARNESS OF THE GLASS. IF TINTED OR COLORED GLASS IS USED THE EFFECTS OF THE DUST AND MOISTURE ARE LESS APPARENT AND NOT LIKELY TO BE ANNOYING, IF GLAZING IS WELL DONE.

STORM RESISTING WINDOWS.

STORM SASHES COULD BE USED IN PLACE OF OUTSIDE SHUTTERS OR BLINDS WITH DETAILS ON PLATES VI, VIII, AND IX.



@L.M.

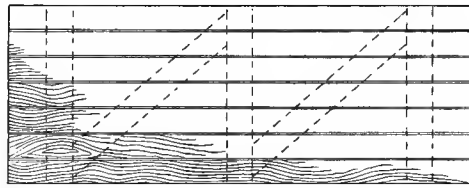


№ 1

M- MUNTINS
P- PANELS
R- RAILS
S- STILES
HEIGHT FROM
FLOOR TO CENTER
OF KNOB OR THUMB
PIECE OF LATCH
SHOULD BE FROM
2' 9" TO 3' 4"

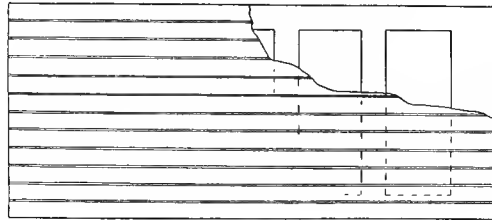


SECTION OF № 1



№ 2.

BROKEN LINES SHOW LEDGERS (OR LEDGES) AND BRACES ON BACK OF DOOR.



№ 3.

ON THESE TWO DRAWINGS THE FRONTS ARE BROKEN AWAY TO SHOW FRAMED UP CORE OF № 3 AND BACK OF № 4.



№ 4.

TYPES OF DOORS, WITH GENERAL DISCUSSION.

№ 1. THIS IS AN ORDINARY paneled door, the most common type of door in use. THE NUMBER AND ARRANGEMENT OF PANELS MAY BE VARIED INDEFINITELY AT THE OPTION OF THE DESIGNER. IT IS DESIRABLE, HOWEVER, SO TO DESIGN IT THAT THE LOCK WILL COME OPPOSITE A PANEL AND THUS AVOID WEAKENING THE DOOR BY CUTTING OFF TENONS FOR LOCK. A GOOD DOOR SHOULD BE BLIND TENONED SO THAT ENDS OF TENONS WILL NOT SHOW ON EDGES OF DOOR.

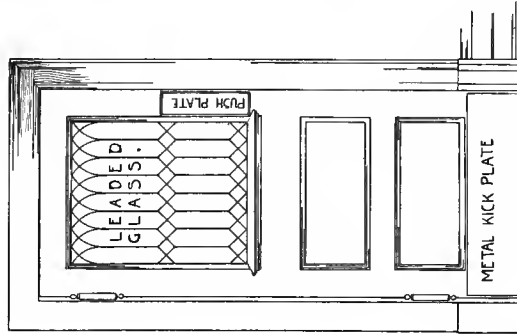
№ 2.- A LEDGED DOOR CONSISTING OF ORDINARY MATCHED BOARDS (USUALLY BEADED OR VED) WITH LEDGERS (LEDGES) AND BRACES ON THE BACK.- NOT MUCH USED EXCEPT IN BOARD PARTITIONS OR SMALL CLOSETS IN CHEAP WORK

№ 3. A BATTEN DOOR WITH FRAMED UP CORE. THIS IS THE BEST METHOD OF CONSTRUCTING A BATTEN DOOR, BUT IS EXPENSIVE. TREATED ORNAMENTALLY WITH WROUGHT IRON HINGES, ETC., THIS TYPE OF DOOR MAY BE USED VERY EFFECTIVELY IN SOME PLACES. SOMETIMES BATTENS ARE PUT ON ONE SIDE OF A paneled door, thus showing as a batten door on one side and a paneled door on the other.

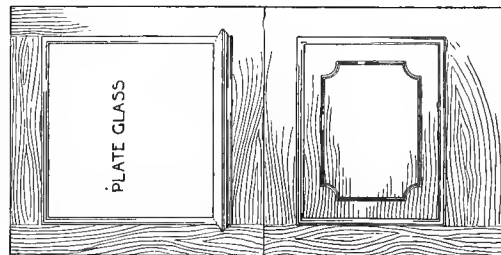
№ 4. A SOLID BATTEN DOOR MADE OF TWO THICKNESSES OF $\frac{7}{8}$ MATCHED BOARDS -USUALLY BEADED OR VED- LAID DIAGONALLY, WITH THE BOARDS ON ONE SIDE AT RIGHT ANGLES TO THOSE ON THE OTHER. A SOLID DOOR OF THIS KIND COVERED WITH SHEET METAL -TIN, IRON, COPPER- WITH LOCK JOINTS AND WITH STRAP HINGES BOLTED ON MAKES THE BEST KIND OF FIRE DOOR. ASBESTOS PAPER IS SOMETIMES PUT UNDER THE METAL COVERING.

№ 5. A 'OUTCH DOOR', -USED FOR OUTSIDE DOORS ONLY. THE UPPER PART IS ARRANGED TO OPEN INDEPENDENTLY OF THE LOWER PART, A SLIDING BOLT FASTENING THE TWO PARTS TOGETHER WHEN REQUIRED TO WORK AS A SINGLE DOOR. THE UPPER PART MAY HAVE EITHER GLASS OR WOOD PANELS.

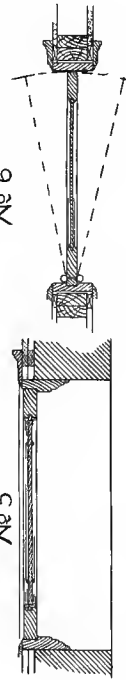
№ 6. A DOUBLE ACTING SERVICE DOOR FOR PANTRIES, ETC. GLASS IN UPPER PART PREVENTS COLLISIONS IN SERVICE. IN LARGE HOTELS WHERE ONE DOOR IS USED FOR ENTRANCE AND ANOTHER FOR EXIT THE GLASS IS USUALLY DISPENSED WITH AND DOORS ARE OFTEN COVERED WITH CLOTH OR LEATHER.



№ 6



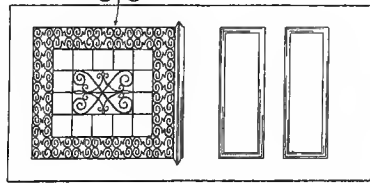
№ 5



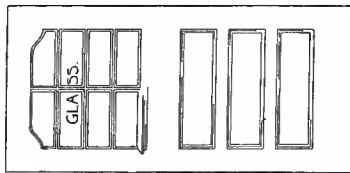
12' 6' 0 1 2' 3' 4' 5' 6' 7'
SCALE - $\frac{1}{8}$ " TO 12"

©AM

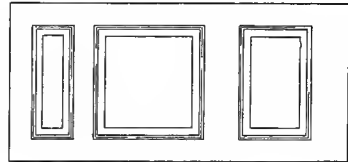
PLATE XVIII



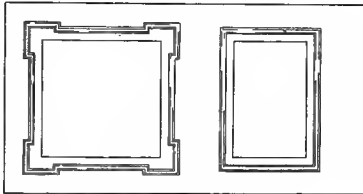
No 1



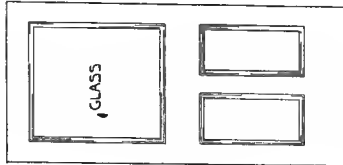
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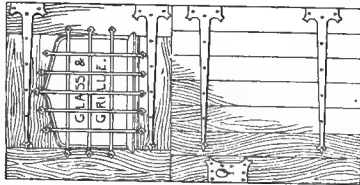
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No 4

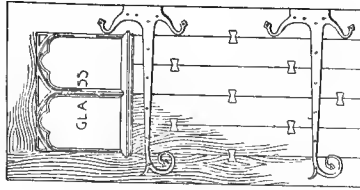


No 5



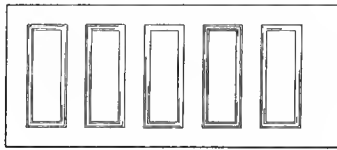
No 6

A DUTCH BATTEN DOOR.

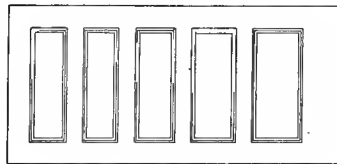


No 7

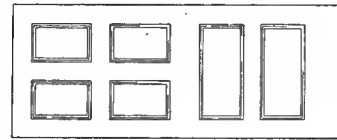
SCALE - 1/4" TO 12".



No 8



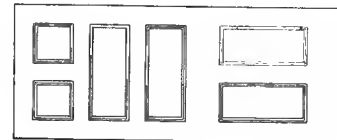
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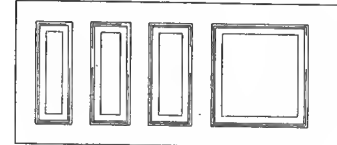
No 10



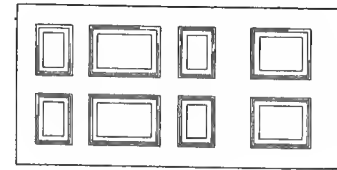
No 11



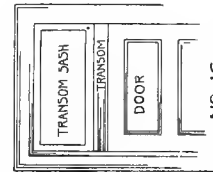
No 12



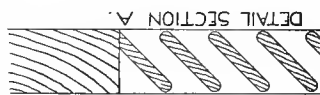
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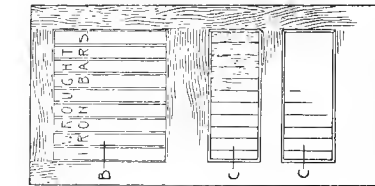
No 14



No 15

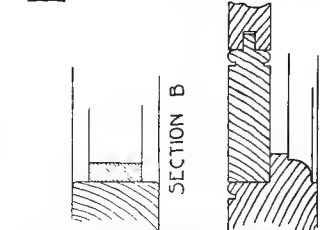


No 16



No 17

A DOOR FOR BATH AND WATER CLOSET COMPARTMENTS.



No 18

DOOR FOR BOX STALL IN A STABLE.

EXAMPLES OF DOORS IN VARIOUS STYLES.

NO 1 TO 7 ARE SUGGESTIONS FOR ENTRANCE DOORS AND NO 8 TO 16 ARE SUGGESTIONS FOR INTERIOR DOORS. W. C. DOORS (NO 17) ARE SIMPLY TO SCREEN THE SEPARATE COMPARTMENTS AND SHOULD BE MADE SMALL AND LIGHT. SLATS SHOULD OVERLAP SO AS TO CUT OFF ANY HORIZONTAL LINE OF VISION FROM THE OUTSIDE.

BOX STALL DOORS (NO 18) SHOULD BE HEAVY AND STRONG. THE OBJECT IN CONSTRUCTING PANELS AS HERE SHOWN IS TO MAKE SOMETHING THAT IS NOT EASILY DAMAGED BY A KICKING HORSE AND IS EASILY REPAIRED IF DAMAGED.

SECTION B

SECTION C

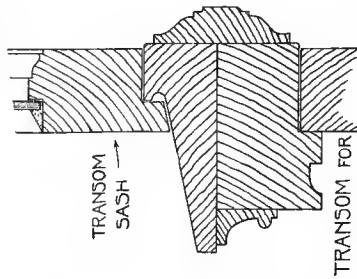
OUTSIDE ARCHITRAVE.

SCREEN
DOOR.

DETAIL FOR A DOOR
FRAME IN A FRAME
WALL.

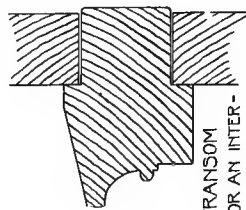
DOOR

SEE NOTES ON PLACING OF
GROUNDS, PLATE XXI.



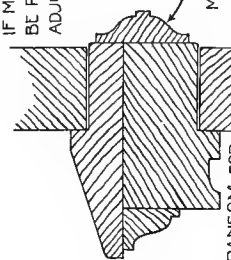
TRANSOM
SASH

TRANSOM FOR
AN EXTERIOR
DOOR.



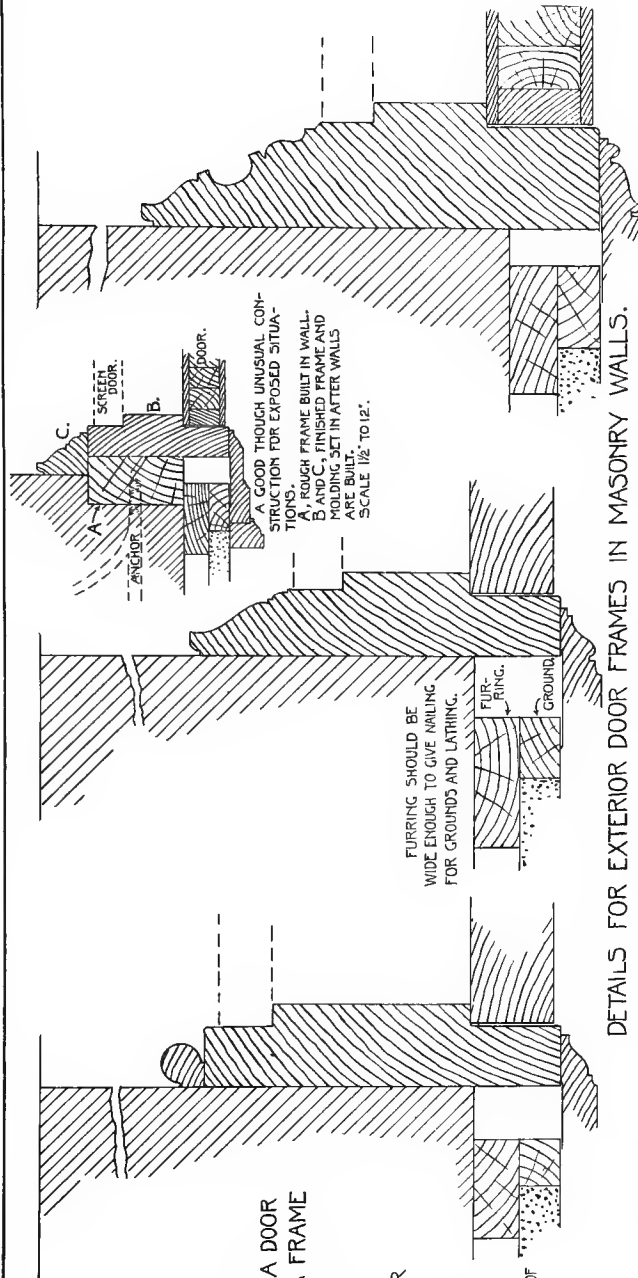
TRANSOM
FOR AN INTER-
IOR DOOR.

TRANSOM SASHES ARE
USUALLY HINGED AT BOTTOM TO
SWING IN AT TOP, THOUGH THEY
ARE SOMETIMES FIXED OR PIVOTED.
IF MOVABLE AT ALL THEY SHOULD
BE PROVIDED WITH TRANSOM
ADJUSTERS.



TRANSOM FOR
AN INTERIOR DOOR

THIS MOLDING SHOULD
MEMBER WITH THE ARCHITRAVE.



A GOOD THOUGH UNUSUAL CON-
STRUCTION FOR EXPOSED SITUA-
TIONS.
A. ROUGH FRAME BUILT IN WALL.
B AND C. FINISHED FRAME AND
MOLDING SET IN AFTER WALLS
ARE BUILT.
SCALE 1/2" TO 12".

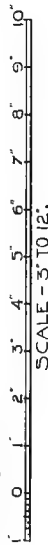
FURRING SHOULD BE
WIDE ENOUGH TO GIVE NAILING
FOR GROUNDS AND LATHING.



DETAILS FOR EXTERIOR DOOR FRAMES IN MASONRY WALLS.

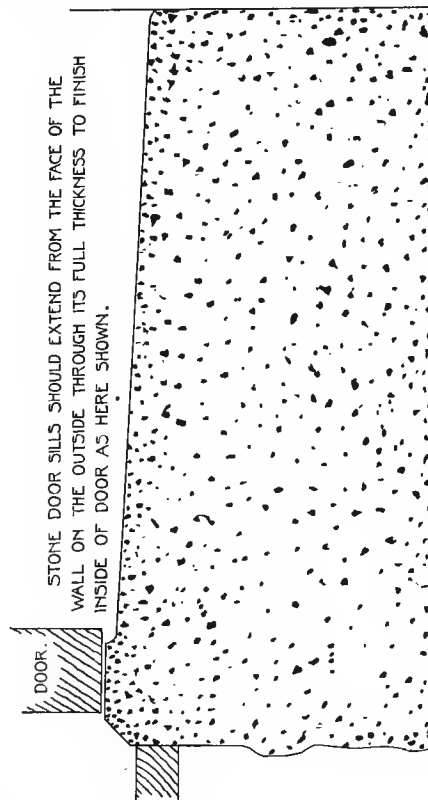
FRAMES FOR OUTSIDE DOORS SHOULD ALWAYS HAVE REBATES FOR SCREEN
DOORS. THOUGH OUTSIDE DOORS ARE REBATED INTO THE FRAMES IN MOST
CASES, IT IS ENTIRELY FEASIBLE TO SET THEM WITH STOPS AS SHOWN BY
SECTIONS 1 AND 3 FOR INTERIOR DOOR FRAMES: SEE PLATE XXI.

FRAMES SHOULD BE SO CONSTRUCTED THAT THEY CAN BE SET IN PLACE AFTER WALLS
ARE BUILT. THEY ARE USUALLY FASTENED BY NAILING TO WOODEN WEDGES DRIVEN INTO
MORTAR JOINTS OF MASONRY.



SCALE - 3" TO 12".

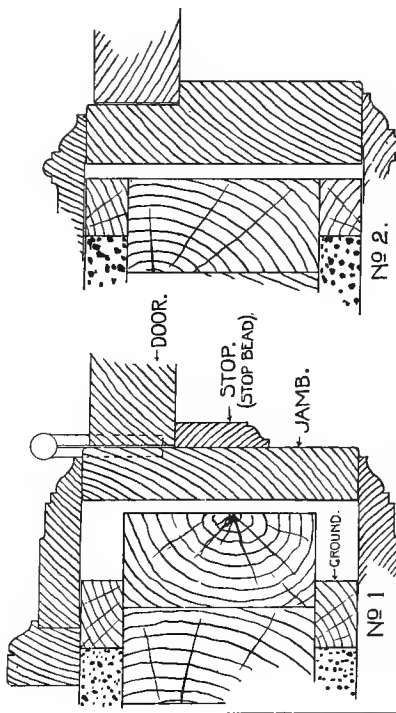
STONE DOOR SILLS SHOULD EXTEND FROM THE FACE OF THE
WALL ON THE OUTSIDE THROUGH ITS FULL THICKNESS TO FINISH
INSIDE OF DOOR AS HERE SHOWN.



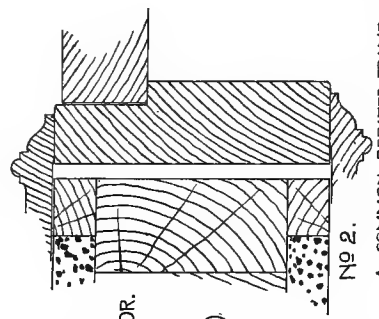
SECTION OF A STONE DOOR SILL.

DETAILS OF OUTSIDE DOOR FRAMES, STONE SILL, AND TRANSOMS.

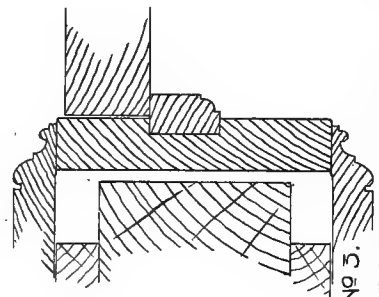
Q.A.M. PLATE XX



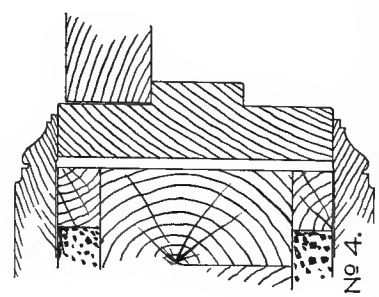
NO 1
AN ORDINARY FRAME WITH STOP BEAD.
IN CHEAP WORK THE FRAME IS USUALLY
MADE $\frac{3}{8}$ INSTEAD OF $1\frac{1}{2}$ THICK.



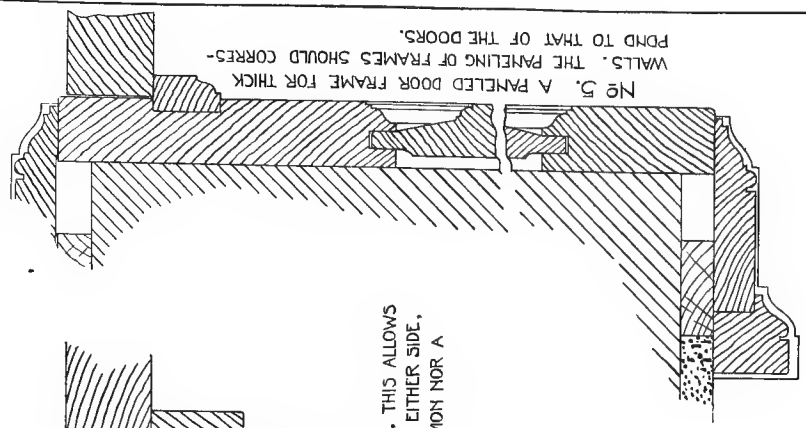
NO 2.
A COMMON REBATED FRAME.



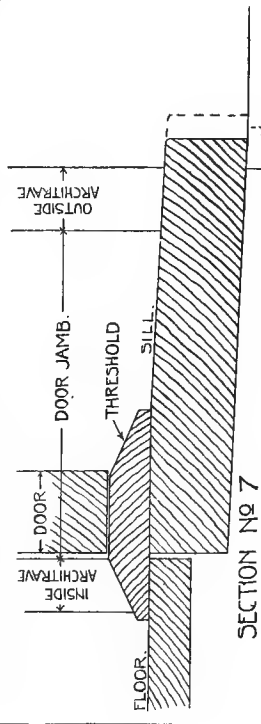
NO 3.
FRAME WITH STOP PLOUGHED IN.
THIS FORM OF CONSTRUCTION IS ONE
OF THE BEST IN EVERY WAY.



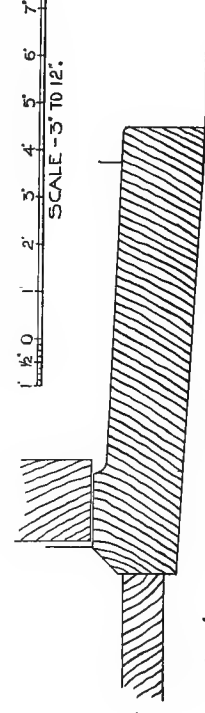
NO 4.
DOUBLE REBATED FRAME. THIS ALLOWS
THE DOOR TO BE HUNG ON EITHER SIDE,
BUT IT IS NEITHER A COMMON NOR A
PLEASING FORM.



NO 5. A PANELED DOOR FRAME FOR THICK
WALLS. THE PANELING OF FRAMES SHOULD CORRES-
POND TO THAT OF THE DOORS.



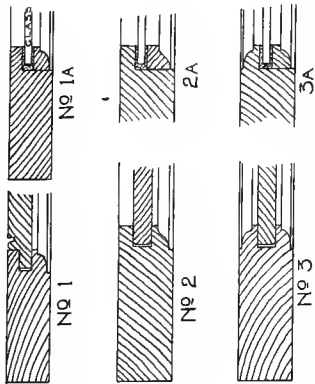
SECTION NO 7
SECTIONS OF SILLS FOR OUTSIDE DOORS IN
FRAME HOUSES. SECTION NO 7 IS THE MORE COMMON
BUT IS NOT SO GOOD AS NO 8. THESE SILLS SHOULD BE
OF OAK OR SOME OTHER HARD WOOD.
PORCH FLOORS MAY BE ON A LEVEL WITH BOTTOMS OF
SILLS OR ONE STEP DOWN, AS INDICATED BY BROKEN
LINES.



SECTION NO 8.
TWO SUGGESTIONS FOR MODIFICATIONS OF SECTION NO 8 IN
EXPOSED SITUATIONS. SCALE $\frac{1}{2}$ THAT OF NO 8.

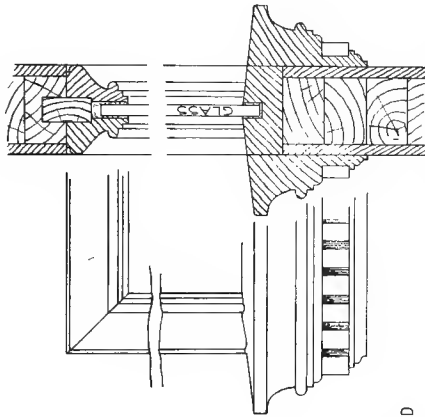
DETAILS OF INTERIOR DOOR FRAMES AND WOODEN SILLS.

SECTIONS 3 AND 5 SHOW THE BEST FORMS FOR FRAMES. NO 2 IS A VERY COMMON FORM, BUT IS OBJECTIONABLE ON ACCOUNT OF BRINGING THE TOP ARCHITRAVE LOWER ON ONE SIDE OF THE DOOR THAN ON THE OTHER.
THESE DETAILS ARE APPLICABLE TO MASONRY WALLS AS WELL AS TO FRAME WALLS, THE WIDTH OF FRAMES BEING MADE TO SUIT THICKNESS OF WALL.
HINGES (BUTTS) SHOULD ALWAYS BE WIDE ENOUGH TO THROW THE DOOR CLEAR OF PROJECTING ARCHITRAVES, WAINSCOTINGS, ETC., WHEN IT IS OPENED BACK TO THE WALL.
ON STUD PARTITIONS ARE COMMONLY PLACED AS SHOWN ON SECTIONS 2 AND 4 AND ARCHITRAVES ARE NAILED TO THE STUDS THROUGH THE PLASTER; BUT IT IS BETTER, AND ON MASONRY WALLS NECESSARY, TO SET THEM AS IN SECTIONS 1, 3, 5, AND 6 TO GIVE A DIRECT NAILING FOR THE BACK EDGE OF ARCHITRAVE.

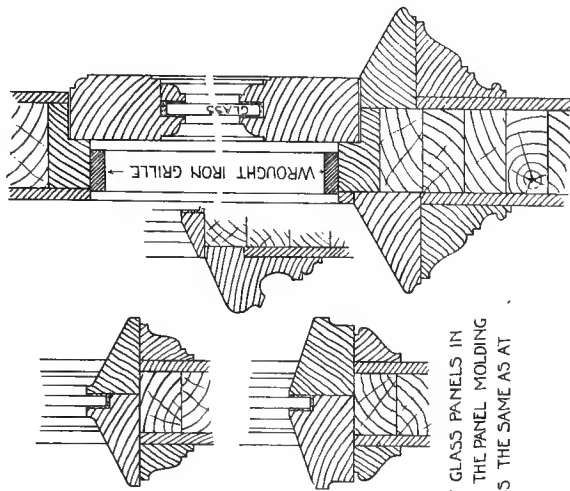


SECTIONS 1 TO 3A ARE DETAILS FOR SMALL DOORS SUCH AS ARE USED FOR KITCHEN AND PANTRY DRESSERS. WIDTHS OF STILES, RAILS, ETC., WILL VARY WITH THE DESIGN AND SIZE OF DOOR.

DETAILS OF JOINT BETWEEN UPPER AND LOWER PARTS OF A DUTCH DOOR. DRIP MOLDING MAY BE OMITTED IF DOOR IS SHELTERED BY A PORCH ROOF.

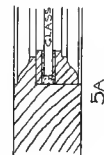
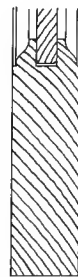
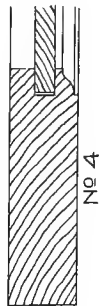


DETAILS OF MOLDINGS AT BOTTOMS OF GLASS PANELS IN DOORS. THESE ARE OFTEN OMITTED AND THE PANEL MOLDING CONTINUED ACROSS AT BOTTOM OF GLASS THE SAME AS AT TOP AND SIDES.



DOOR WITH GRILLE AND GLASS. THE GLASS IS SET IN A HINGED FRAME SO THAT IT CAN BE OPENED FOR CLEANING THE OUTSIDE.

SCALE - 3" TO 12".



No 5

5A



No 6



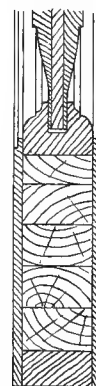
6A



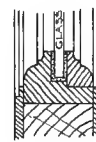
No 7



7A



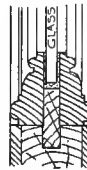
No 8



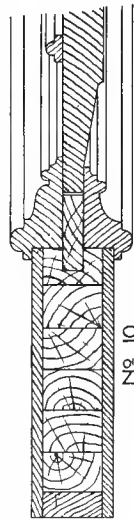
8A



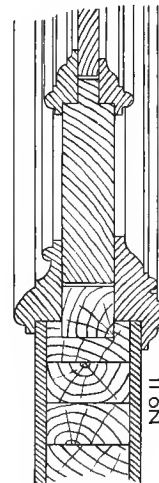
No 9



9A



No 10



No 11

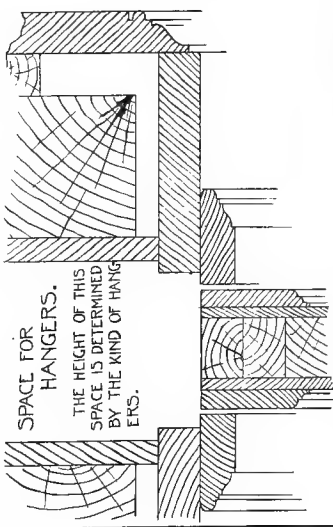
DETAILS OF DOORS

CHEAP AND MEDIUM GRADE DOORS ARE USUALLY MADE FROM SOLID STOCK, BUT THE BETTER GRADES SHOULD BE VENEERED ON A BUILT UP CORE OF WHITE PINE. PANELS ARE USUALLY SOLID, BUT IF VERY LARGE, OR IF THE TWO SIDES ARE REQUIRED TO SHOW DIFFERENT KINDS OF WOOD, THEY SHOULD BE BUILT UP IN 'THREE PLY' AS INDICATED IN SECTION No 8.

WIDTHS OF STILES, ETC., VARY IN COMMON PRACTICE. SEPARATE MOLDINGS SET WITH FIXED TONGUE ON STILES AND RAILS, LEAVING PANELS FREE TO MOVE, AS SHOWN IN SECTIONS 7, 9, 10, & 11, ARE MUCH BETTER THAN MOLDINGS RUN SOLID. MOLDINGS SHOULD NEVER BE FASTENED DIRECTLY TO PANELS.

SECTIONS 4 TO 7A ARE FOR COMMON SOLID DOORS, WHILE SECTIONS 8 TO 11 ARE FOR MORE EXPENSIVE VENEERED DOORS.

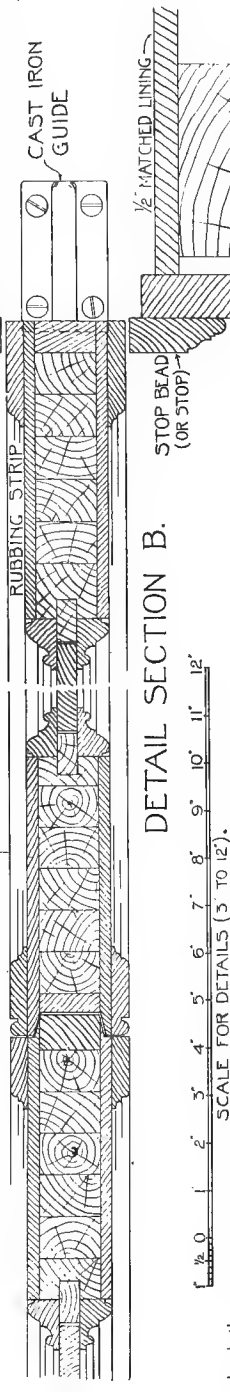
SECTIONS 10 AND 11 EACH SHOW TWO STYLES OF FINISH, ONE SIDE DIFFERING FROM THE OTHER. THIS IS UNUSUAL, BUT THE DIFFERENCE IN TREATMENT OF TWO ROOMS MAY SOMETIMES REQUIRE IT.



NOTES ON HANGERS.

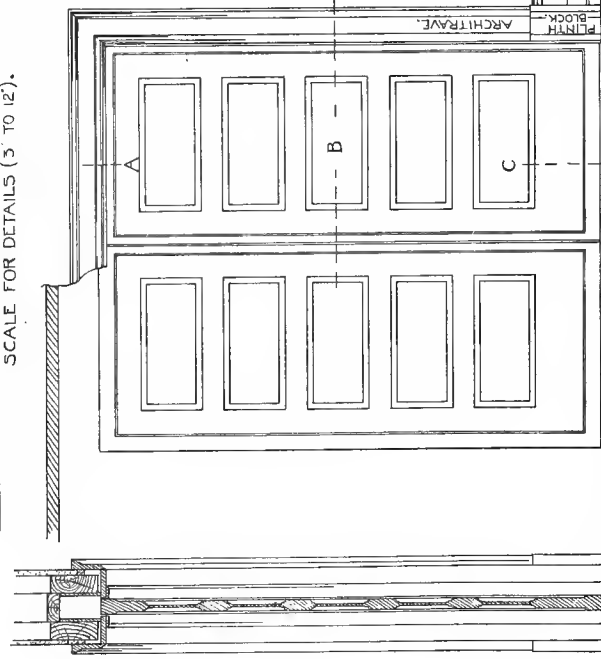
AS THERE ARE NOW A NUMBER OF EXCELLENT SLIDING DOOR HANGERS ON THE MARKET, IT SEEMED BEST NOT TO SHOW ANY PARTICULAR ONE HERE. FOR SIMPLE AND CHEAP HANGERS ORDINARY GROOVED SHEAVES RUNNING ON A SINGLE STEEL TRACK ARE GOOD, BUT FOR A GOOD GRADE OF WORK THOSE OVERHEAD HANGERS WITH ROLLER BEARINGS AND ADJUSTABLE TUBULAR TRACKS ARE RECOMMENDED. TRACKLESS HANGERS WITH LONG ARMS AND LAZY TONGS MOVEMENT ARE OFTEN USED, BUT THERE ARE USUALLY SO MANY PARTS TO GET OUT OF ORDER THAT THEY ARE SELDOM AS SATISFACTORY AS THE MORE SIMPLE OVERHEAD HANGERS.

SECTION A.

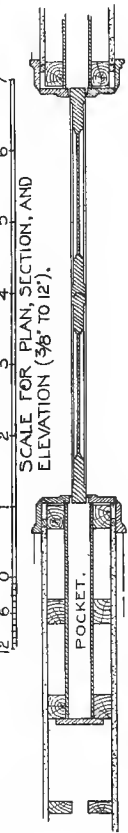


DETAIL SECTION B.

SCALE FOR DETAILS (5' TO 12').



SECTION C.

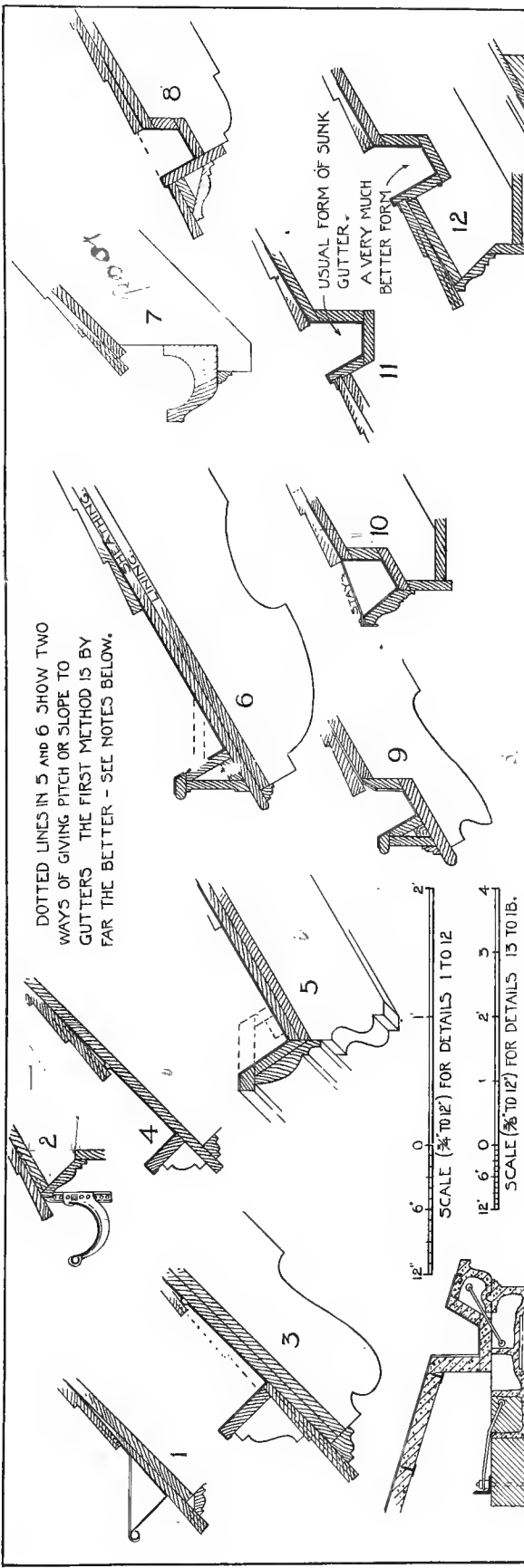


SCALE FOR PLAN, SECTION, AND ELEVATION (3/8" TO 12').

DETAILS OF SLIDING DOORS.

FRAME PARTITIONS FOR ORDINARY SLIDING DOORS VARY FROM 10' TO 13' IN THICKNESS, DEPENDING UPON THE THICKNESS OF THE DOORS AND SIZE OF STUDS. 2' STUDS ARE OFTEN USED, BUT 3' STUDS MAKE A MUCH STIFFER CONSTRUCTION. POCKETS SHOULD ALWAYS BE LINED AS A PROTECTION FROM DIRT CAUSED BY FALLING BITS OF PLASTER. SMALL MOLDED RUBBING STRIPS SHOULD ALWAYS BE PUT ALL AROUND THE MARGINS OF SLIDING DOORS SO THAT STILES, RAILS, AND MOLDINGS WILL WORK FREE OF STOPS AND NOT BE MARKED BY ANY SLIGHT WARPING OF DOORS.

C.A.M.

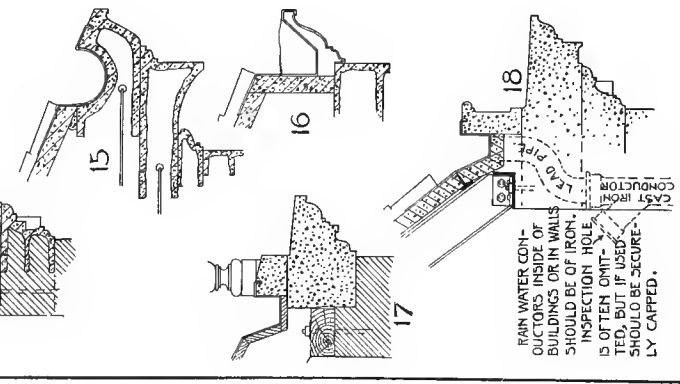


NOTES ON GUTTERS AND CONDUCTORS

GUTTERS ARE USUALLY MADE OF OR LINED WITH TIN, GALVANIZED IRON, OR COPPER; TIN BEING THE CHEAPEST, WHILE COPPER IS THE BEST AND MOST EXPENSIVE. SHEET LEAD IS SOMETIMES USED AND IS EXCELLENT FOR LINING GUTTERS IN STONE OR TERRA COTTA CORNICES. WHILE TIN OR GALVANIZED IRON SHOULD NOT BE USED FOR THIS CLASS OF WORK. IN LINING GUTTERS FOR SHINGLE, TILE, OR SLATE ROOFS, GREAT CARE SHOULD BE TAKEN TO EXTEND THE LINING WELL UP UNDER SHINGLES, TILES, OR SLATES, THAT THERE MAY BE NO LEAKAGE FROM WATER BACKING UP ON ACCOUNT OF GUTTERS FILLING WITH SNOW AND ICE.

THE SIZE AND PITCH OR SLOPE OF GUTTERS MAY BOTH BE MUCH LESS THAN COMMONLY SUPPOSED. THE WRITER HAS FOR SEVERAL YEARS LIVED UNDER A ROOF WHERE AN AREA OF 50x70' IS SATISFACTORILY DRAINED BY A GUTTER THAT AT ITS DEEPEST POINT IS 4 1/2" DEEP, 8 1/2" WIDE AT THE TOP, AND 5" WIDE AT THE BOTTOM. THE WATER IS ALL TAKEN OFF AT TWO SIDES OF THE BUILDING, ONE BRANCH OF THE GUTTER BEING 66' LONG TO THE CONDUCTOR AND TURNING FOUR RIGHT ANGLES IN THAT LENGTH. THE FALL IS 3 1/2" IN 68' AND THE WATER FROM THE WHOLE AREA OF 50x70' IS EASILY CARRIED AWAY BY ONE 4" ROUND CONDUCTOR. AN ACCURATE AND UNIFORM FALL OF 2" IN 50' IS AMPLE TO INSURE A GOOD FLOW OF WATER; AND IF BOTTOMS OF GUTTERS ARE V SHAPED RATHER THAN FLAT OR ROUND, THE FLOW IS ACCELERATED, THUS TENDING TO KEEP GUTTERS CLEAN. THE PITCH OR FALL IS USUALLY OBTAINED BY A FALSE BOTTOM HAVING A UNIFORM RISE FROM THE OUTLET; BUT IN CHEAP HANGING OR STANDING GUTTERS THE GUTTER IS ITSELF SET ON A SLOPE, MUCH TO THE DETRIMENT OF THE DESIGN FROM THE ARTISTIC POINT OF VIEW.

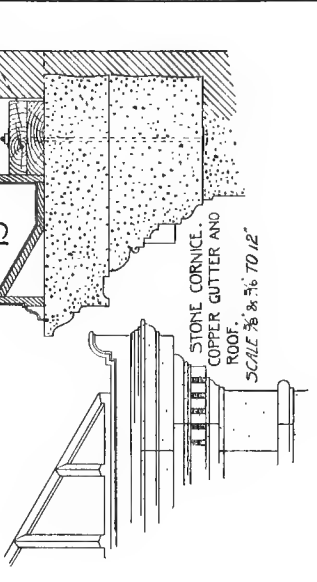
SOME ARCHITECTS DESIGN LARGE GUTTERS TO PREVENT CLOGGING WITH SNOW AND ICE; BUT THE ADVANTAGE IS DOUBTFUL AS A LARGE GUTTER CLOGS ALMOST AS QUICKLY AS A SMALL ONE AND THAWS OUT MUCH MORE SLOWLY. CONDUCTORS OR DOWN SPOUTS OUTSIDE OF BUILDINGS SHOULD BE OF TIN, GALVANIZED IRON, OR COPPER, AND TO PREVENT BURSTING FROM FREEZING SHOULD BE RECTANGULAR OR OCTAGONAL RATHER THAN ROUND IN SECTION. SEE ALSO NOTE WITH SECTION 18.



RAIN WATER CONDUCTORS INSIDE OF BUILDINGS OR IN WALLS SHOULD BE OF IRON. INSPECTION HOLES ARE OFTEN OMITTED, BUT IF USED SHOULD BE SECURELY CAPPED.

DETAILS OF GUTTERS FOR WOOD, STONE, AND TERRA COTTA CORNICES

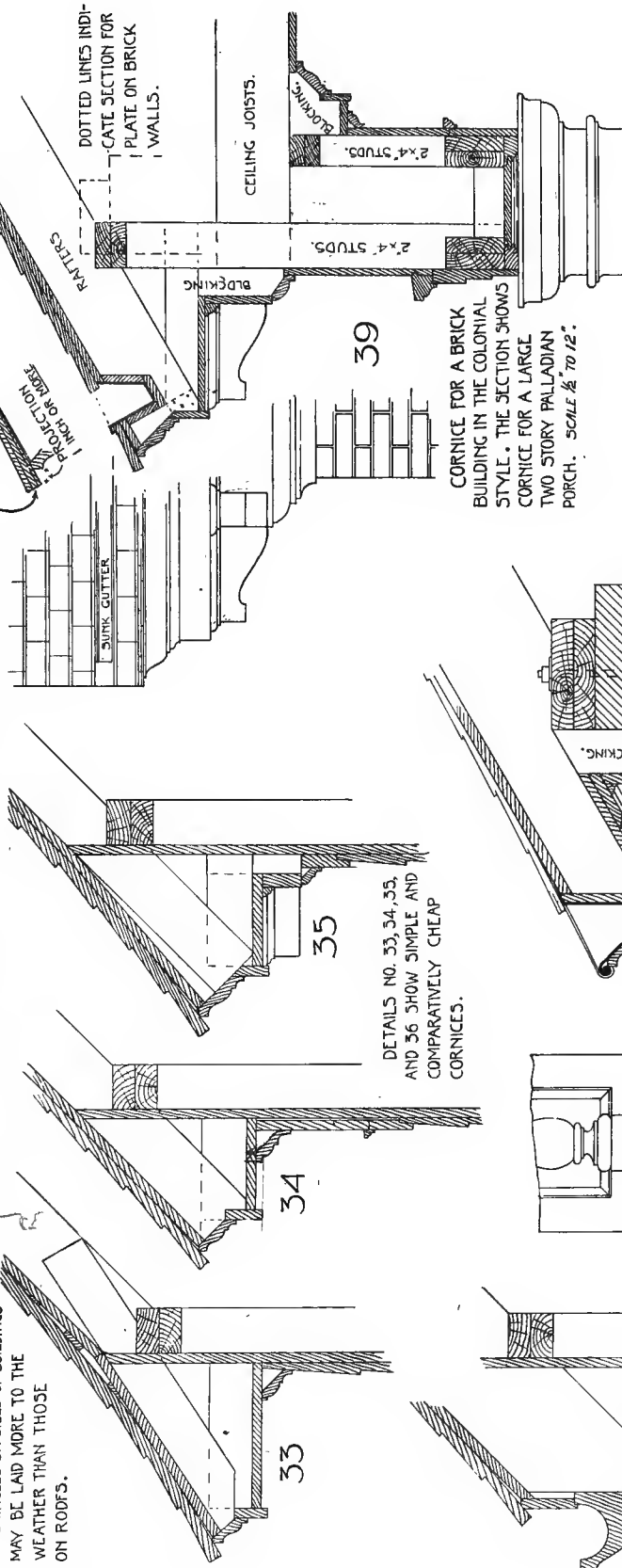
MATERIAL INDEX.	
	WOOD.
	BRICK.
	STONE.
	TERRA COTTA.



WOODEN SHINGLES ARE USUALLY 16", 18", OR 20" LONG, ABOUT $\frac{1}{6}$ " THICK AT POINTS AND FROM $\frac{1}{4}$ " TO $\frac{1}{2}$ " THICK AT BUTTS, ACCORDING TO MAKE AND QUALITY. HAND MADE SHINGLES ARE BEST AND MAY BE MADE TO SPECIAL SIZES IF DESIRED, BUT THEY ARE VERY EXPENSIVE.

SHINGLES ON ROOFS SHOULD SHOW LESS THAN $\frac{1}{2}$ THE LENGTH OF THE SHINGLE TO THE WEATHER, SAY 48" FOR 16", 52" FOR 18", AND 6" FOR 20" SHINGLES. CAVES SHOULD BE STARTED WITH THREE THICKNESSES, ONE COURSE POINTS AND TWO COURSES FULL SHINGLES, THUS:

SHINGLES ON SIDES OF BUILDINGS MAY BE LAID MORE TO THE WEATHER THAN THOSE ON ROOFS.



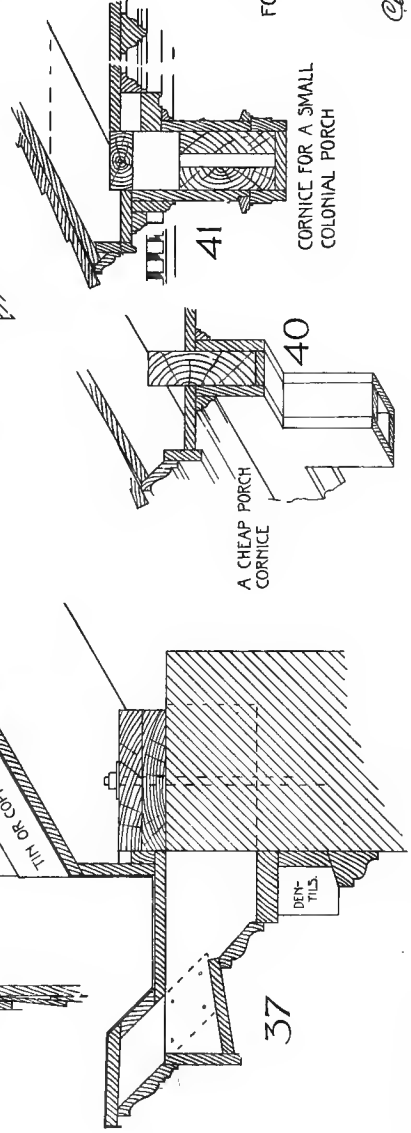
DETAILS NO. 33, 34, 35, AND 36 SHOW SIMPLE AND COMPARATIVELY CHEAP CORNICES.

CORNICE FOR A BRICK BUILDING IN THE COLONIAL STYLE. THE SECTION SHOWS CORNICE FOR A LARGE TWO STORY PALLADIAN PORCH. SCALE $\frac{1}{8}$ " TO 12".

12" 6" 0 1' 2'
SCALE ($\frac{3}{4}$ " TO 12"), EXCEPT FOR DETAIL NO 39.

DETAILS OF BOX CORNICES

ADAPTABLE, WITH SLIGHT MODIFICATIONS, TO EITHER WOODEN OR MASONRY BUILDINGS.
FOR GUTTER DETAILS SEE PLATES XXIV AND XXVII.

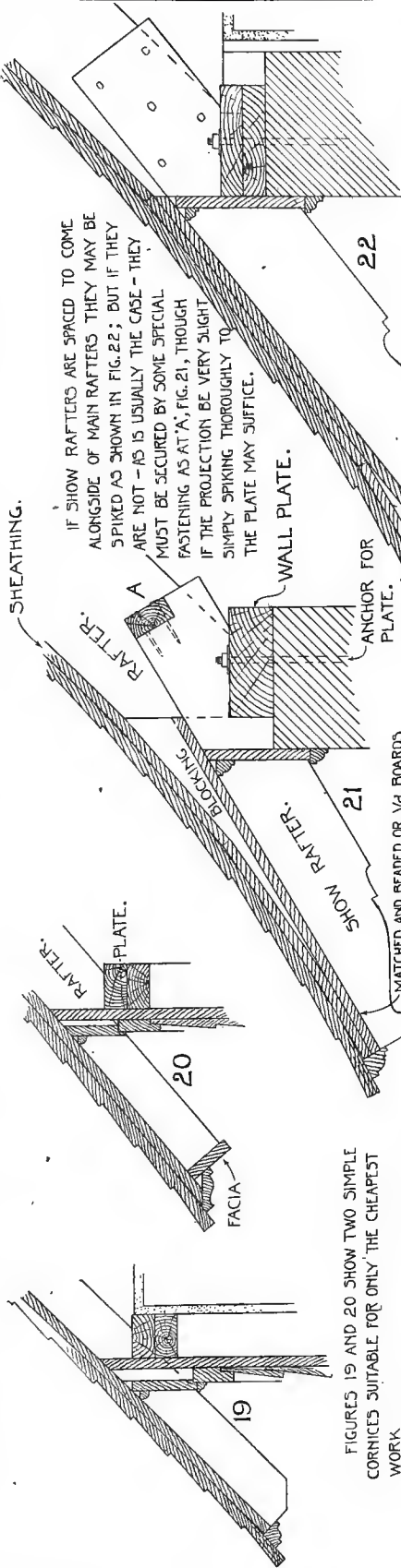


A CHEAP PORCH CORNICE

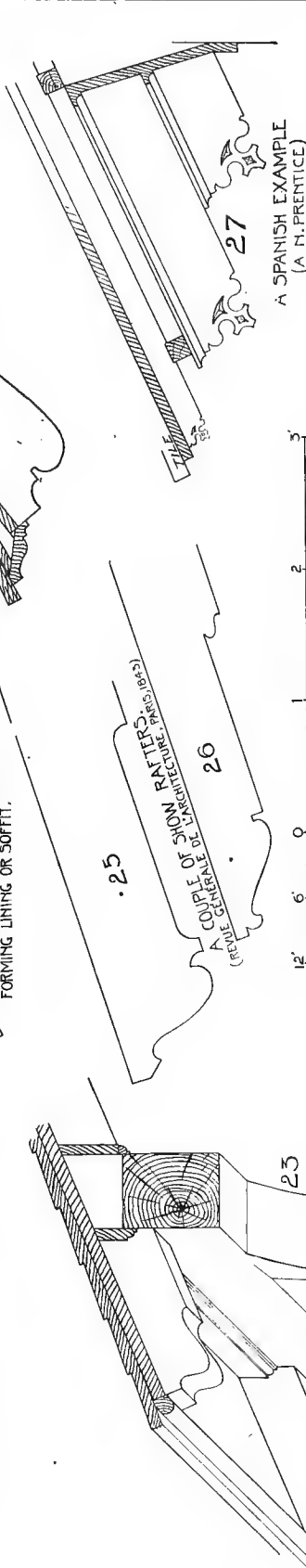
CORNICE FOR A SMALL COLONIAL PORCH

CAM

PLATE XXV



FIGURES 19 AND 20 SHOW TWO SIMPLE CORNICES SUITABLE FOR ONLY THE CHEAPEST WORK



SCALE = 3/4" TO 12"
(FIGURES 23, 26, AND 27 ARE NOT DRAWN TO SCALE)

NOTES

THIS TYPE OF CORNICE IS CAPABLE OF GREAT VARIATION IN TREATMENT, FROM THE PLAINEST AND CHEAPEST TO THE MOST ELABORATE AND COSTLY WORK. THOUGH THE DETAILS HERE GIVEN SHOW SHINGLE ROOFS, TILE, SLATE, OR SHEET METAL MAY BE USED AS WELL. FOR RAIN WATER GUTTERS SEE PLATES XXIV AND XXVII

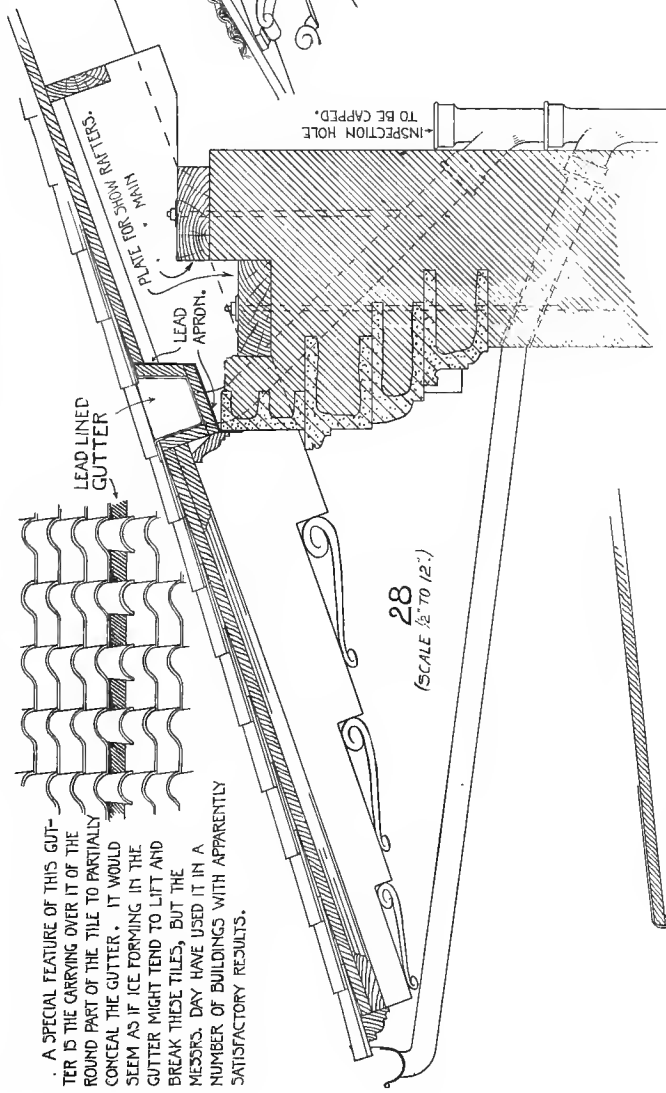
IN CHEAP WORK THE 'SHOW RAFTERS' ARE SIMPLY THE MAIN ROOF RAFTERS EXTENDED; BUT IN GOOD WORK THEY ARE OF BETTER MATERIAL, OFTEN SAVED TO PATTERN, AND MAY BE SET AT A DIFFERENT ANGLE FROM THE MAIN RAFTERS TO GIVE A SLIGHT CURVE OR BELL SHAPE TO THE ROOF AT THE EAVES. THIS CURVE SHOULD NOT BE TOO NOTICEABLE, HOWEVER, AS IT THEN DEFEATS ITS OWN END BY BECOMING A VULGARITY RATHER THAN A REFINEMENT IN DESIGN. FOR THE SAME REASON IT IS BETTER TO KEEP THE SOFFIT STRAIGHT, AS IN FIGS. 21 AND 22, RATHER THAN TO CURVE EITHER SOFFIT OR SHOW RAFTERS. THE CURVE FOR ROOF BEING GIVEN IN THE UPPER SHEATHING AS SHOWN. THE EXTRA LINING OR SHEATHING OVER THE SHOW RAFTERS NOT ONLY ALLOWS THIS TO BE DONE, BUT ALSO PREVENTS ROOFING NAILS FROM BEING DRIVEN THROUGH AND SHOWING ON THE UNDER SIDE

THE DESIGNS HERE SHOWN MAY, WITH SLIGHT MODIFICATIONS, BE USED FOR EITHER FRAME OR MASONRY BUILDINGS.

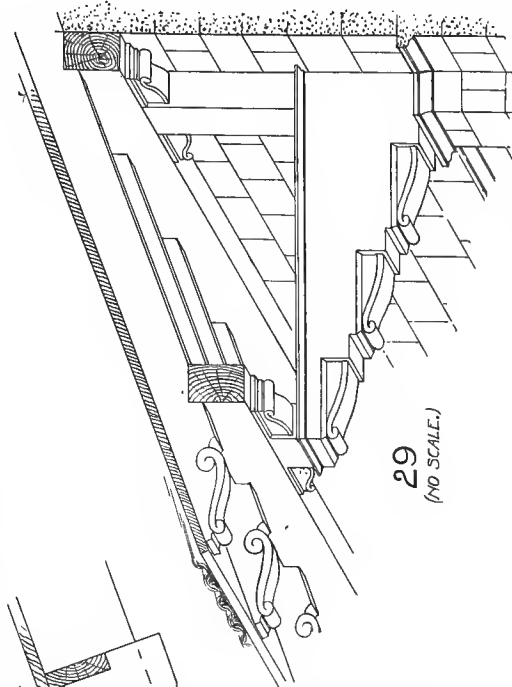
DETAILS OF OPEN TIMBER CORNICES.

SEE ALSO PLATES XXIV AND XXVII.

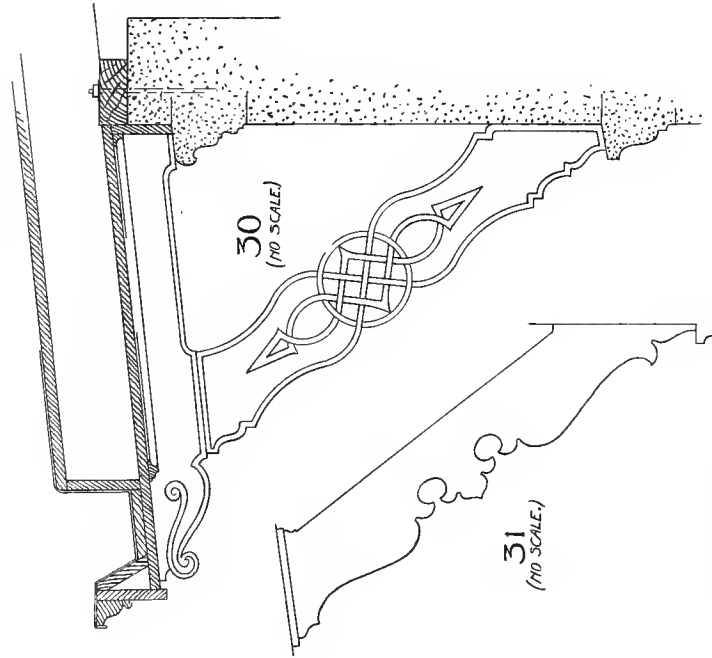
A SPECIAL FEATURE OF THIS GUTTER IS THE CARRYING OVER IT OF THE ROUND PART OF THE TILE TO PARTIALLY CONCEAL THE GUTTER. IT WOULD SEEM AS IF ICE FORMING IN THE GUTTER MIGHT TEND TO LIFT AND BREAK THESE TILES, BUT THE MESSRS. DAY HAVE USED IT IN A NUMBER OF BUILDINGS WITH APPARENTLY SATISFACTORY RESULTS.



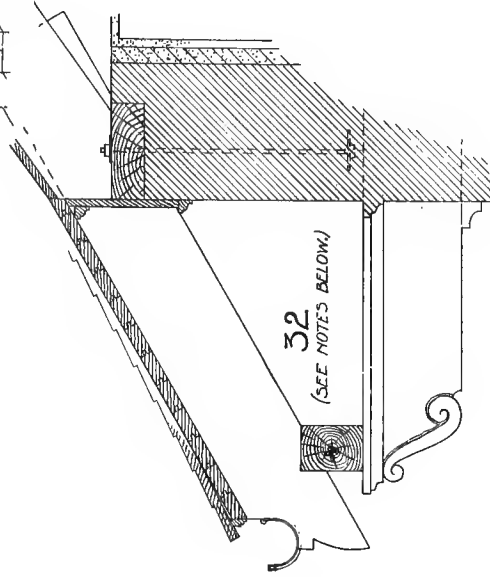
28
(SCALE $\frac{1}{2}$ \" TO 12\".)



29
(NO SCALE.)



30
(NO SCALE.)



32
(SEE NOTES BELOW)

NOTES.

- NO 28 IS REDRAWN - SLIGHTLY MODIFIED - FROM A CORNICE BY FRANK MILES DAY & BRO. FOR HORTICULTURAL HALL, PHILA.
- NO 29 IS REDRAWN FROM AN OLD PRINT OF AN ITALIAN CORNICE, AUTIDR NOT KNOWN.
- NO 30 IS REDRAWN FROM "REVUE GÉNÉRALE DE L'ARCHITECTURE", PARIS, 1943.
- NO 31, A CORNICE BRACKET FROM SAME SOURCE AS NO 30.
- NO 32 IS DRAWN FROM A PHOTOGRAPH OF A CORNICE BY EDMUND M. WHEELWRIGHT. THIS CORNICE CONSISTS OF HEAVY CANTILEVER BRACKETS SPACED ABOUT 6' APART AND CARRYING AT THE OUTER END A BEAM, WHICH IN TURN CARRIES RAFTERS SPACED ABOUT 2' APART. THE SCALE IS ABOUT $\frac{1}{2}$ \" TO 12\".

DETAILS OF OPEN TIMBER CORNICES.

HALF TIMBER CONSTRUCTION.

USUALLY IN EUROPE THE TIMBER FORMS THE REAL CONSTRUCTION, FILLED IN AND BACKED UP WITH BRICK WHICH IS COMMONLY PLASTERED ON THE OUTSIDE FLUSH WITH THE TIMBERS. IN THIS COUNTRY THE TIMBERS ARE NOT STRUCTURAL, ARE USED FOR EFFECT ONLY, AND ARE USUALLY MADE TO PROJECT FROM $\frac{1}{8}$ TO 1" FROM THE FACE OF PLASTER.

SHAM HALF TIMBER WORK.

TIMBERS MAY BE 1", $1\frac{1}{2}$ ", $1\frac{1}{2}$ ", OR 2" THICK, 4" TO 12" WIDE, AND ARE USUALLY LEFT ROUGH. WOODEN LATHING IS SOMETIMES USED BUT EXPANDED METAL OR WOVEN WIRE IS MUCH BETTER. "PLASTER BOARD" IS GOOD AND FINISHES WITH ONE COAT OF PLASTER. ALL LATHING REQUIRES FURRING TO GIVE CLINCH FOR PLASTER: WOOD FURRING FOR WOODEN LATH; AND WOOD, $\frac{1}{4}$ " ROUND IRON, OR SMALL V SHAPED IRON FOR METAL LATH. SHEATHING SHOULD ALWAYS BE COVERED WITH GOOD BUILDING PAPER BEFORE LATHING. PLASTER IS OFTEN FINISHED AS ROUGH CAST OR PEBBLE DASH.



FIG. 1.

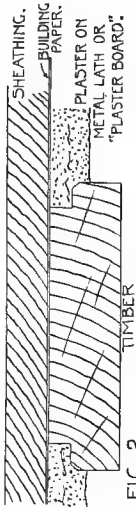


FIG. 2.

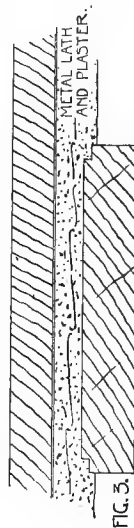


FIG. 3.

FIGS. 3 AND 4 SHOW TIMBERS PUT ON OVER LATH AND FIRST COAT OF PLASTER.

SCALE $\frac{1}{2}$ " TO 12"

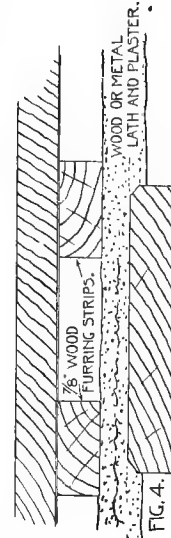
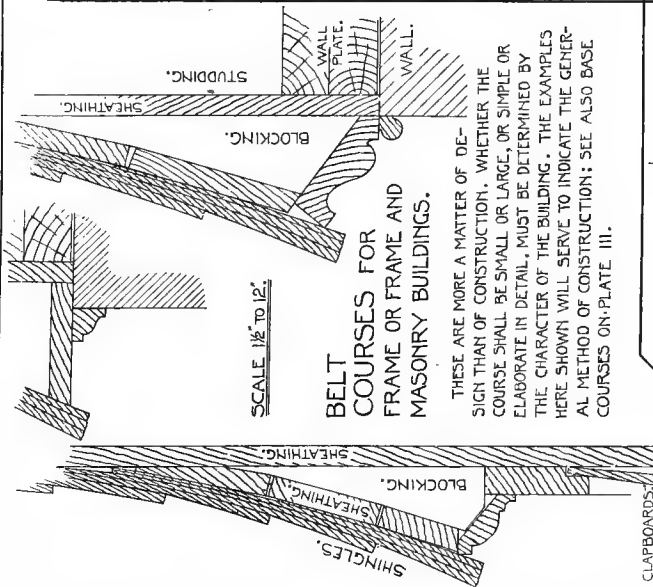


FIG. 4.

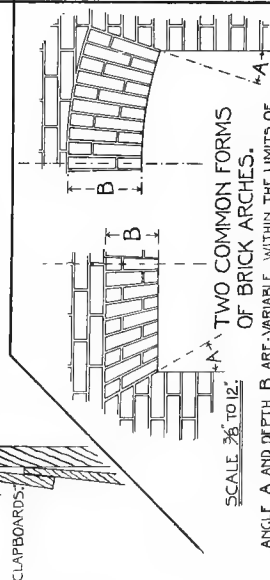
FURRING STRIPS MUST BE SPACED FOR NAILING BOTH LATHING AND TIMBERS.



SCALE $\frac{1}{2}$ " TO 12"

BELT COURSES FOR FRAME OR FRAME AND MASONRY BUILDINGS.

THESE ARE MORE A MATTER OF DESIGN THAN OF CONSTRUCTION. WHETHER THE COURSE SHALL BE SMALL OR LARGE, OR SIMPLE OR ELABORATE IN DETAIL, MUST BE DETERMINED BY THE CHARACTER OF THE BUILDING. THE EXAMPLES HERE SHOWN WILL SERVE TO INDICATE THE GENERAL METHOD OF CONSTRUCTION: SEE ALSO BASE COURSES ON PLATE III.

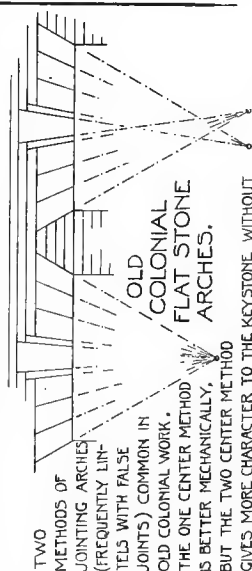


SCALE $\frac{3}{8}$ " TO 12"

TWO COMMON FORMS OF BRICK ARCHES.

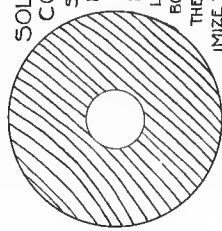
ANGLE A AND DEPTH B ARE VARIABLE, WITHIN THE LIMITS OF THE MATERIAL, AT THE OPTION OF THE DESIGNER.

SOME BRICK-MAKERS MAKE BRICKS OF SPECIAL SHAPES AND SIZES FOR ARCHES, BUT MOST OF THEM DO NOT; THEREFORE IT IS USUALLY BEST TO DESIGN BRICK ARCHES SO THAT THEY CAN BE BUILT OF BRICKS GROUND TO SHAPE FROM STOCK SIZES. FLAT ARCHES SHOULD HAVE THE SOFT CENTERED ABOUT $\frac{1}{6}$ OR $\frac{1}{8}$ FOR EACH FOOT OF SPAN.



TWO METHODS OF JOINING ARCHES (FREQUENTLY LINTELS WITH FALSE JOINTS) COMMON IN OLD COLONIAL WORK.

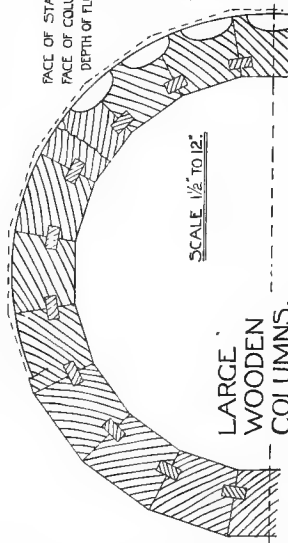
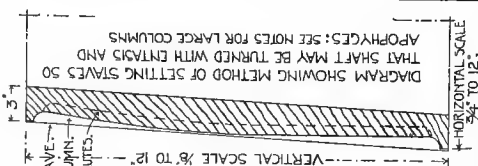
THE ONE CENTER METHOD IS BETTER MECHANICALLY, BUT THE TWO CENTER METHOD GIVES MORE CHARACTER TO THE KEYSTONE WITHOUT INCREASING THE ANGLE AT THE SKEW BACK.



SOLID TURNED COLUMNS.

SOLID COLUMNS UNLESS VERY SMALL SHOULD ALWAYS HAVE A 2" (OR LARGER) HOLE BORED THROUGH THE CENTER TO MINIMIZE THE TENDENCY TO CHECK. THE PRACTICAL LIMIT OF DIAMETER FOR SOLID TURNED SHAFTS IS BETWEEN 10 AND 12 INCHES, AS UNLESS CUT FROM TIMBER ENTIRELY OUTSIDE THE HEART OF THE LOG, THEY WILL CHECK BADLY IN SPITE OF ALL PRECAUTIONS.

TO CHECK. THE PRACTICAL LIMIT OF DIAMETER FOR SOLID TURNED SHAFTS IS BETWEEN 10 AND 12 INCHES, AS UNLESS CUT FROM TIMBER ENTIRELY OUTSIDE THE HEART OF THE LOG, THEY WILL CHECK BADLY IN SPITE OF ALL PRECAUTIONS.



SCALE $\frac{1}{2}$ " TO 12"

LARGE WOODEN COLUMNS.

COLUMNS 12" OR MORE IN DIAMETER SHOULD BE STAVED UP AS HERE SHOWN. 2", $2\frac{1}{2}$ ", OR 3" POPLAR OR WHITE PINE PLANKS ARE USED AND THEY SHOULD BE THOROUGHLY KILN DRIED AND GLUED AND SPUNED UP IN THE BEST POSSIBLE MANNER. THE ROUGH SHAFT SHOULD BE TAPERED AS SHOWN BY EXAGGERATED DIAGRAM AT THE RIGHT, IN ORDER THAT THE WOOD MAY NOT BE TURNED TOO THIN AT THE TOP IN GIVING ENTASIS TO THE COLUMN AND THAT THE APERTURES AT TOP AND BOTTOM MAY BE PROPERLY TURNED ON THE SHAFT.

IN FLUTED COLUMNS IT IS NOT NECESSARY TO PLACE JOINTS WITH REFERENCE TO FLUTES, AS THEY SHOULD BE SO WELL MADE AS TO BE PERFECTLY TIGHT WHEREVER THEY MAY COME. THE FLUTES MUST NOT BE TOO DEEP OR THEY WILL CUT TOO NEARLY THROUGH THE WOOD AT TOP AND BASE OF SHAFT. IN THE DETAIL ABOVE THE WOOD IS SHOWN AT ITS THICKEST POINT, BUT AT THE BASE THE TAPER OF SHAFT AND INCLINATION OF STAVES BRING THE FLUTES IN VERY NEARLY TO THE SPLINES IN THE JOINTS. BUILT UP COLUMNS MAY BE MADE OF ALMOST ANY SIZE, BUT THEIR MAKING SHOULD BE ENTRUSTED ONLY TO THOSE WHO HAVE SPECIAL FACILITIES FOR DOING THE WORK PROPERLY.

THE DETAIL ABOVE SHOWS A COLUMN 22" IN DIAMETER STAVED UP IN 20 PIECES. A 12" COLUMN WOULD REQUIRE ONLY 8 STAVES.

MISCELLANEOUS EXTERIOR DETAILS.

Q.R. III

12' 6" 0 1' 2' 3' 4' 5' 6' 7' 8' 9'

SCALE (1/4" TO 12") FOR SMALL DRAWINGS.

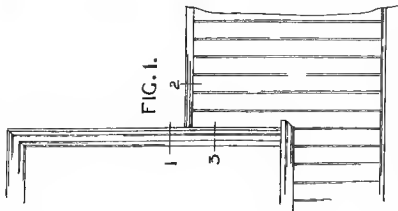


FIG. 1. SHOWS WAINSCOT CAP STOPPING AGAINST ARCHITRAVE.

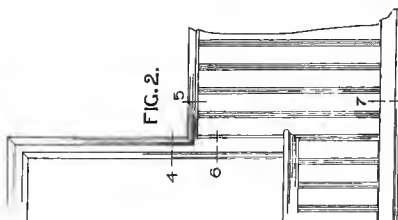


FIG. 2. SHOWS WAINSCOT CAP MITRED AND CARRIED UP OVER ARCHITRAVE AS A BACK MOLDING.

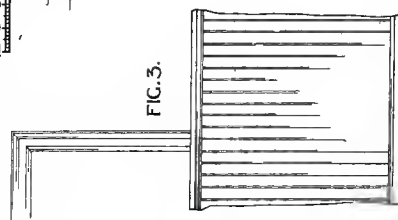


FIG. 3. SHOWS WAINSCOT CAP CONTINUOUS WITH STOOL OF WINDOW.

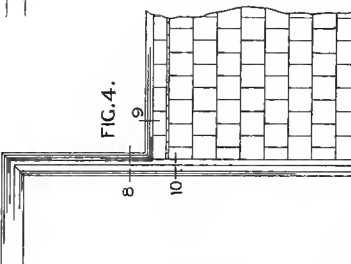


FIG. 4. SHOWS TILE WAINSCOT WITH WOODEN CAP TREATED AS IN FIG. 2.

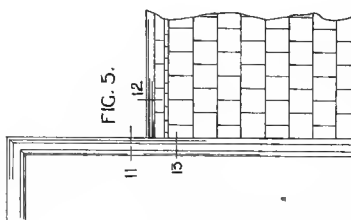
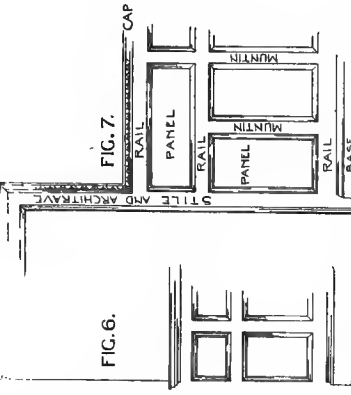
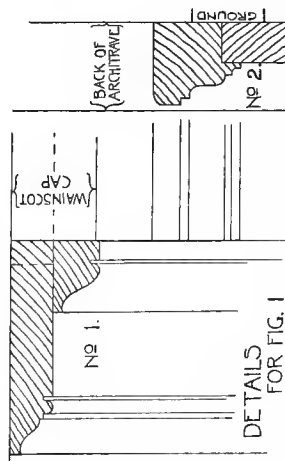


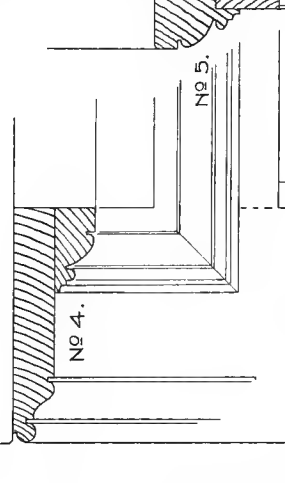
FIG. 5. SHOWS TILE WAINSCOT WITH EITHER WOOD OR TILE CAP STOPPING AGAINST ARCHITRAVE. (DETAILS 11, 12, & 13 ARE THE SAME AS 1, 2, & 3, FIG. 1, EXCEPT THAT TILES TAKE THE PLACE OF WOOD WAINSCOT.)



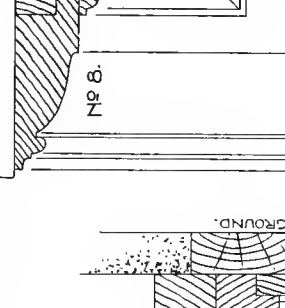
FIGS. 6 AND 7. SHOW TWO paneled wainscots. FIG. 6. SHOWS CAP RETURNED ON ITSELF, AND FIG. 7. SHOWS CAP CARRIED OVER ARCHITRAVE AS IN FIG. 2.



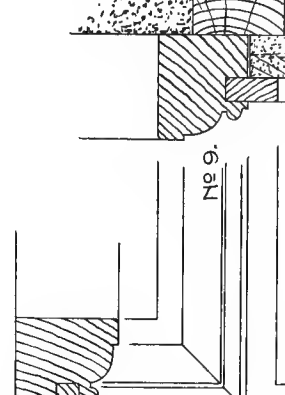
DETAILS FOR FIG. 1



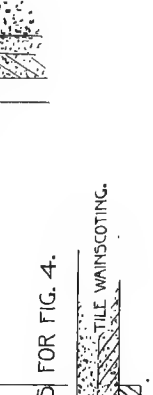
DETAILS FOR FIG. 2.



DETAILS FOR FIG. 3.



DETAILS FOR FIG. 4.



DETAILS FOR FIG. 5.

SCALE (3/8" TO 12") FOR DETAILS.

NOTES.

AS A MATTER OF DESIGN WAINSCOTING MAY BE USED IN ALMOST ANY PART OF A HOUSE, BUT FOR SANITARY AND OTHER PRACTICAL REASONS IT SHOULD ALWAYS BE USED IN KITCHENS, LAUNDRIES, BATH ROOMS, ETC. WHERE WATER IS TO BE USED TILE IS MUCH BETTER THOUGH MORE EXPENSIVE. THAN WOOD FOR BOTH WAINSCOTING AND FLOORS. THE HEIGHT OF WAINSCOTING IS NOT DETERMINED BY ANY FIXED RULES OR PRACTICE. IT MAY BE VERY LOW OR IT MAY COVER THE ENTIRE WALL FROM FLOOR TO CEILING, THOUGH FROM 3 TO 5 FEET IN HEIGHT WOULD PROBABLY BE CONSIDERED REASONABLE LIMITS FOR ORDINARY WORK. THE WAINSCOT BASE MAY BE A FULL SKIRTING WITH SUB-BASE, OR IT MAY BE REDUCED TO A SMALL SINGLE MEMBER LITTLE MORE THAN A SUB-BASE IN ITSELF. PROVIDE PLENTY OF GROUNDS FOR NAILING AND SEE THAT THE FIRST COAT OF PLASTER IS CARRIED CLEAR TO FLOOR BEHIND ALL WAINSCOTING OR OTHER FINISH TO MAKE EXTERIOR WALLS WARM AND DRY AND TO RENDER PARTITIONS MORE NEARLY SOUND PROOF.

WAINSCOTING AND ARCHITRAVES.

SEE ALSO PLATE XXX.



EXAMPLES OF TONGUED AND GROOVED WAINSCOTING.
SIMPLE MATCHED AND V/D OR BEADED BOARDS (FIRST TWO EXAMPLES) FROM 3 TO 4 INCHES WIDE ARE CHEAPEST; 1/2" BOARDS WITH THICKER GROOVED PIECES HAVING THE EFFECT OF BATTENS (LAST 3 EXAMPLES) ARE NEXT IN COST; AND THE PANELED WORK IS THE MOST EXPENSIVE AND BY FAR THE BEST BOTH FOR DESIGN AND CONSTRUCTION.

PANELING.

SEE ALSO DOOR DETAILS, PLATE XXII.

A. ORDINARY CONSTRUCTION, MOLDINGS RUN SOLID ON FRAME WORK OF PANELING.

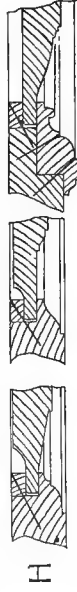
B. MOLDINGS RUN ON FRAME WORK BUT PANELS SET IN FROM BACK AFTER BEING FINISHED. WITH THIS CONSTRUCTION SHRINKAGE OF PANELS DOES NOT AFFECT STRENGTH OR APPEARANCE OF THE WORK.

C. A WRONG BUT VERY COMMON CONSTRUCTION. MOLDING IS NAILED TO PANEL AND SHRINKAGE OF PANEL DISTORTS OR SPLITS WORK AND OPENS JOINTS.

D. THE SAME FORM OR DESIGN AS C BUT WITH MUCH BETTER CONSTRUCTION. MOLDING SHOULD BE GLUED TO FRAME AND PANELS SET IN FROM BACK AS AT B.

E. THE BEST CONSTRUCTION FOR MOLDED PANEL WORK THAT IS TO SHOW ON BOTH SIDES, AS FOR DOORS, ETC. SEE DOOR DETAILS, PLATE XXII.

F AND G SHOW TWO CONSTRUCTIONS FOR PANELS WITH RAISED MOLDINGS. F IS THE BETTER AS IT ALLOWS MOLDING TO BE GLUED AND MORE FIRMLY FASTENED TO FRAME AND AT THE SAME TIME LEAVES THE PANEL FREE AS IN B. IF MOLDING IN G IS FASTENED AS SHOWN IT IS LIKELY TO WARP AWAY FROM PANEL, AND IF FASTENED TO PANEL IT IS AS BAD AS EXAMPLE C.

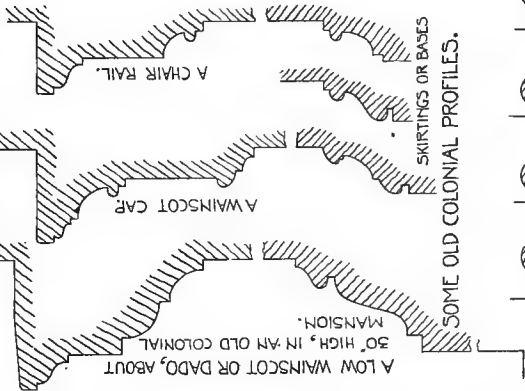


PANELS THEMSELVES MAY BE PERFECTLY PLAIN OR THEY MAY BE RAISED, MOLDED, CARVED, OR OTHERWISE ORNAMENTALLY TREATED. THE MOLDINGS AROUND MAY BE CARVED IF THE QUALITY OF WORK IS GOOD ENOUGH, BUT NONE OF THE EXAMPLES SHOWN ABOVE IS HEAVY ENOUGH FOR SUCCESSFUL CARVING EXCEPT FOR VERY MINUTE WORK.

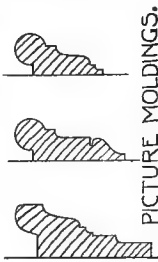
LARGE PANELS SHOULD BE OF VENEER CONSTRUCTION IN 3 THICKNESSES, AS 12" IS ABOUT THE LIMIT OF WIDTH FOR SATISFACTORY WORK WITH SOLID PANELS.

GROOVE FOR ORNAMENTAL PLATES, PLAQUES, ETC.

CAP SUITABLE FOR A DINING ROOM WAINSCOTING. (UPPER AND LOWER PARTS OF A PIECE GLUED UP BEFORE MOLDINGS ARE CUT.)



SOME OLD COLONIAL PROFILES.



PICTURE MOLDINGS. SEE ALSO PLATE IX.

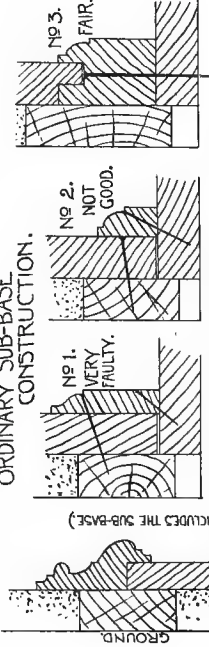


SUGGESTIONS FOR CONSTRUCTION OF ANGLES.



SCALE, 1" = 3" TO 12".

ORDINARY SUB-BASE CONSTRUCTION.



SKIRTING CONSTRUCTION NOTES.

SETTLEMENT OF FLOOR WILL CAUSE WORK TO TEAR APART IN NO. 1; NO. 2 IS MEASURE IN DESIGN AND NO. 3 IS GOOD; BUT ALL THREE REQUIRE THE FINISHED FLOOR TO BE PUT IN PLACE BEFORE THE SKIRTING. NO. 3 MAY BE PUT DOWN TO UNDER FLOOR AND THE UPPER FLOOR FITTED TO IT, BUT IT IS THEN ALMOST IMPOSSIBLE TO SMOOTH THE FLOOR PROPERLY WITHOUT MARRING THE BASE.

NO. 4 SHOWS AN EXCELLENT THOUGH AS YET UNUSUAL CONSTRUCTION. A WIDE GROUND IS PUT DOWN CLOSE TO UNDER FLOOR. PIECE X IS WELL TIE NAILED TO FLOOR BUT NOT NAILED TO GROUND. SKIRTING IS PUT ON AND NAILED TO GROUND BUT NOT TO PIECE X. AFTER ALL WOOD WORK IS READY FOR THE FINAL COAT OF FINISH, THE TOP FLOOR IS LAID, SMOOTHED AND FILLED; THEN THE SUB-BASE, WHICH HAS BEEN FINISHED WITH THE OTHER WOOD WORK, IS PUT IN PLACE AND NAILED TO PIECE X AND TO FLOOR. THIS MAKES A TIGHT JOB, ALLOWS PIECE X AND THE SUB-BASE TO SETTLE WITH THE FLOOR WITHOUT OPENING JOINTS, AND ALLOWS FLOOR TO BE LAID AND SMOOTHED WITHOUT CROWDING OR MARRING THE BASE. (SEE ALSO PLATE III.)

PLINTH BLOCKS, ARCHITRAVES, ETC.

ARCHITRAVES FOR DOORS MAY REST ON PLINTH BLOCKS (SEE PLATE XXIII) TO AVOID CARRYING FINE MOLDINGS TO THE FLOOR AND TO GIVE ADDITIONAL THICKNESS AGAINST WHICH TO STOP SKIRTING. AS ARCHITRAVES, WAINSCOTINGS, CHAIR RAILS, AND SKIRTINGS MEET IN CONSTRUCTION, EACH ONE SHOULD BE DESIGNED WITH REFERENCE TO THE OTHERS THAT THEY MAY JOIN PROPERLY.

CORNICES, FALSE BEAMS, ETC.

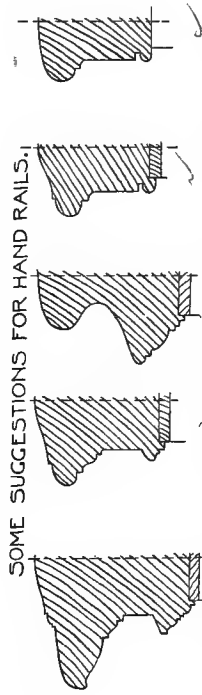
THIS WORK IS OFTEN DONE IN PLASTER AND DECORATED; BUT IF OF WOOD, IT IS BEST FIRST TO DRAW THE SECTION IN PROFILE, THEN TO DRAW IN THE CONSTRUCTION, USING 3/8" BOARDS AS FAR AS POSSIBLE. BOARDS 1/8", 1/4", AND 1/2" THICK MAY BE USED BUT IT IS MORE DIFFICULT TO GET THE THICKER LUMBER WELL SEASONED.

IN ALL GOOD INTERIOR WORK BOARDS MAY BE SPINED, GLUED UP, AND MOLDED OR WORKED TO ALMOST ANY DESIRED FORM.

GENERAL INTERIOR FINISH.

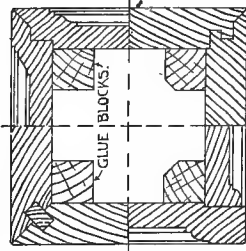
SEE ALSO PLATE XXIX.

SOME SUGGESTIONS FOR HAND RAILS.



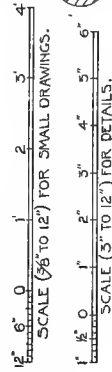
HAND RAILS. THE SUBJECT OF HAND RAILING IS TOO COMPLEX FOR FULL DISCUSSION HERE, BUT THE HEIGHT FROM TOP OF STEP - ON LINE WITH FACE OF RISER - TO TOP OF RAIL SHOULD NOT BE LESS THAN 2' 5" NOR MORE THAN 2' 8"; 2' 6" IS PERHAPS BEST. THE HEIGHT OF RAIL ON LANDINGS AND AROUND WELLS SHOULD BE FROM 2' 8" TO 3' 0". WALL RAILS - HAND RAILS CARRIED ON WALL BRACKETS - SHOULD BE USED FOR STAIRS ENCLOSED BETWEEN WALLS.

BALUSTERS. BALUSTERS MAY BE TURNED OR SQUARE, SIMPLE OR ELABORATE, AND FROM 7/8" TO 1 1/4" IN DIAMETER FOR ORDINARY WORK, BUT LARGER FOR MONUMENTAL WORK. THE SPACING IS OPTIONAL, BUT IN SOME OF THE BEST OF THE OLD COLONIAL STAIRCASES BALUSTERS ARE SPACED THREE TO A TREAD OF 10", 11", OR 12" RUN.



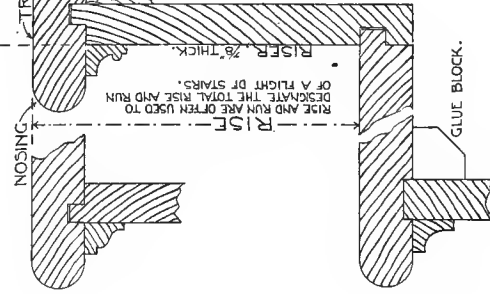
SECTION OF NEWEL SHOWING DIFFERENT METHODS OF CONSTRUCTING ANGLES. SEE ALSO PLATE XXX.

NEWELS. IN CONSTRUCTION, MAY BE SOLID OR BUILT UP; IN FORM, SQUARE, MANY SIDED, OR TURNED; IN DESIGN, PLAIN OR ELABORATE. THE HAND RAIL STARTING IN A SPIRAL WITH BALUSTERS FOLLOWING IT IS OFTEN USED IN PLACE OF A STARTING NEWEL AND IS VERY EFFECTIVE, THOUGH MORE EXPENSIVE THAN A SIMPLE NEWEL.



(SEE NOTE UNDER 'RISE' BELOW)

TREAD - USUALLY 1 1/8" THICK, BUT MAY BE 7/8" OR 1 1/4".

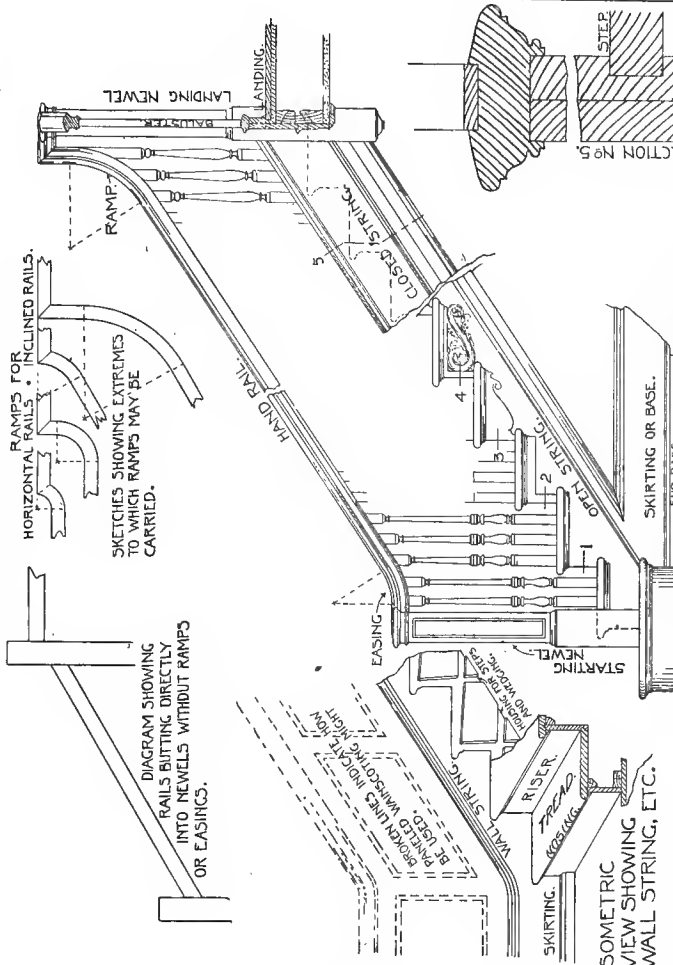


PROPORTION OF RISE AND RUN.

TOO MUCH CARE CAN NOT BE TAKEN IN PROPORTIONING THE RISE AND RUN TO MAKE AN EASY STEP. THE PRODUCT AS WELL AS THE SUM OF RISE AND RUN SHOULD BE PRACTICALLY CONSTANT FOR ALL STAIRS. FROM THIS PRINCIPLE ARE DEDUCED THE FOLLOWING RULES, ALL OF WHICH ARE IN COMMON USE. THE DIMENSIONS ARE TAKEN IN INCHES.

$$\begin{aligned} \text{RISE} \times \text{RUN} &= \text{NOT LESS THAN 70 NOR MORE THAN 75.} \\ \text{RISE} + \text{RUN} &= \begin{matrix} 17 & 18 & 19 & 20 & 21 & 22 & 23 & 24 & 25 \end{matrix} \end{aligned}$$

OF THESE RULES THE FIRST GIVES THE MOST UNIFORM RESULTS; BUT A DESIGNER SHOULD ALWAYS BEAR IN MIND THE LIMITATIONS OF ARBITRARY RULES AND MAKE HIS WORK TO MEET THE PARTICULAR REQUIREMENTS OF EACH CASE. WHILE IT IS GENERALLY CONCEDED THAT A 6" RISE WITH A 12" RUN GIVES AN ALMOST IDEAL STAIRCASE, THE ORDINARY DWELLING HOUSE HARDLY AFFORDS ROOM FOR THIS AND IN PRACTICE A RISE OF ABOUT 7" WITH RUN FROM 10" TO 11" IS MORE COMMON. AN 8" RISE WITH A 9" RUN IS A GOOD PROPORTION FOR BACK STAIRS. IT SHOULD ALSO BE BORNE IN MIND THAT THE RISE MUST BE AN EXACT FACTOR OF THE TOTAL HEIGHT OF THE FLIGHT HOWEVER SMALL THE FRACTIONS INVOLVED.

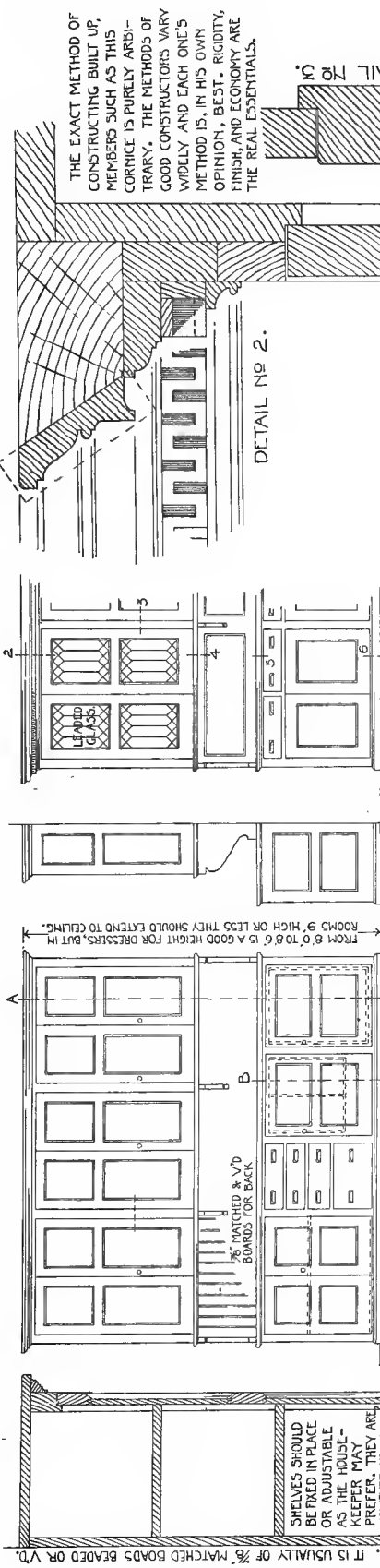


GENERAL ELEVATION SHOWING SEVERAL METHODS OF TREATMENT. THE ENDS OF STEPS AND ALL OTHER ORNAMENTED CONSTRUCTION ADMIT OF GREAT VARIETY IN DESIGN QUITE IMPOSSIBLE EVEN TO INDICATE HERE.



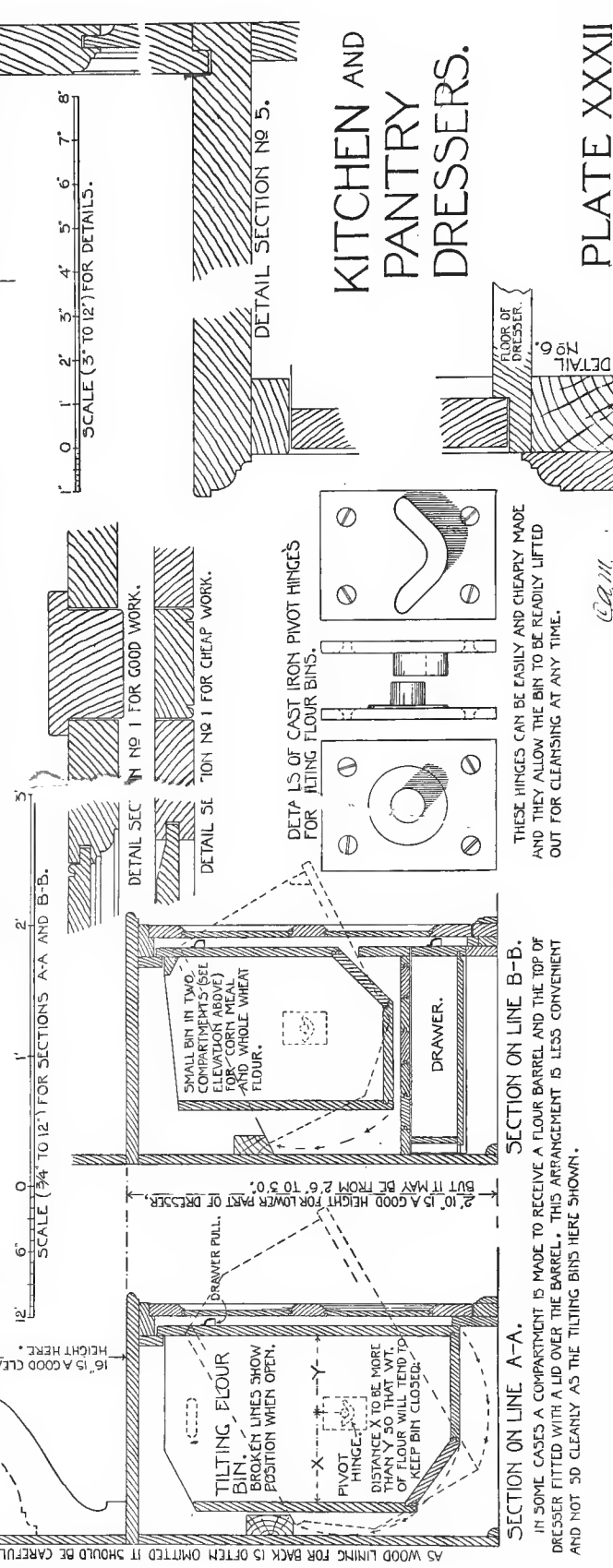
STAIR DETAILS.

NOTE: - ONLY A FEW OF THE PRINCIPAL DETAILS OF STAIR BUILDING ARE GIVEN HERE, AS THE SUBJECT IS TOO BROAD TO ADMIT OF ANYTHING LIKE A COMPREHENSIVE TREATMENT IN A WORK OF THIS KIND.



ELEVATIONS OF TWO DRESSERS, ONE QUITE SIMPLE AND THE OTHER MORE ELABORATE.
SCALE 1/4" TO 12".

THE REQUIREMENTS FOR DRESSERS ARE SO VARIED THAT THE HOUSEKEEPER SHOULD ALWAYS BE CONSULTED WITH REFERENCE TO THE REQUIREMENTS IN EACH CASE FOR KITCHEN UTENSILS, CUTLERY, SILVER, CHINA, TABLE LINEN, FOOD STUFFS, ETC.; ESPECIALLY IS THIS TRUE OF THE LOWER PART, WHERE THE SIZE AND ARRANGEMENT OF COMPARTMENTS AND DRAWERS, AND THE PLACING OF SHELVES CAN SELDOM BE MANAGED SATISFACTORILY WITHOUT CONSULTATION WITH THOSE WHO ARE TO USE THEM. SOME HOUSEKEEPERS WILL REQUIRE KNEADING BOARDS AND A PLACE FOR STORING DINING ROOM EXTENSION TABLE LEAVES IN THE DRESSERS. IN THE FIRST DRESSER SHOWN ABOVE, THE ARRANGEMENT OF FLOUR BINS AND DRAWERS GIVES TOO LITTLE SHELF ROOM IN THE LOWER PART FOR MOST HOUSEKEEPERS, UNLESS THERE WERE PLACE ELSEWHERE FOR KITCHEN UTENSILS.



KITCHEN AND PANTRY DRESSERS.

THE FLUE, BEGINNING AT THROAT, SHOULD BE GRADUALLY CONTRACTED TO NORMAL SIZE DIRECTLY OVER MIDDLE OF FIREPLACE; THEN, IF NECESSARY, IT MAY BE DEFLECTED BY EASY BENDS TO ONE SIDE OR THE OTHER. IF GATHERED DIRECTLY TO ONE SIDE FROM THE THROAT, THE DRAFT IN THROAT WOULD BE STRONGEST ON SIDE NEAREST FLUE AND THE FIREPLACE WOULD BE LIKELY TO SMOKE AT THE OTHER SIDE.

BRICK FLUES SHOULD HAVE $\frac{1}{2}$ " OF BRICK ALL AROUND JOINTS STRUCK SMOOTH AND, NOTWITHSTANDING MANY AUTHORITIES TO THE CONTRARY, SHOULD NOT BE PLASTERED INSIDE, AS PLASTER IS LIKELY TO PEEL OFF AND CLOG OR AT LEAST ROUGHEN FLUES.

THE CHIMNEY BREAST IS OFTEN CARRIED UP STRAIGHT IN BRICK, ESPECIALLY IF THERE IS A FIREPLACE ABOVE; OR IT MAY BE SET BACK FROM FACE OF FIREPLACE TO SAVE SPACE AND MATERIAL AND GIVE A WIDER TOP TO MANTEL SHELF; OR IT MAY BE SET BACK AND FURRED OUT FLUSH AS HERE SHOWN. THERE IS NO FIXED RULE GOVERNING THIS IN PRACTICE.

WITH BACK OF FLUE STRAIGHT TO FIREPLACE OR SLOPING TO THROAT A DOWN DRAFT AT BACK, WHICH IS LIKELY TO OCCUR WHEN FIRE IS STARTED, WOULD DRIVE PUFTS OF SMOKE INTO THE ROOM. THE FLAT SHELF DEFLECTS SUCH DOWNWARD CURRENTS BACK INTO THE CHIMNEY, WHERE THEY COULD BE HEATED TO MOVE UPWARD TOGETHER.

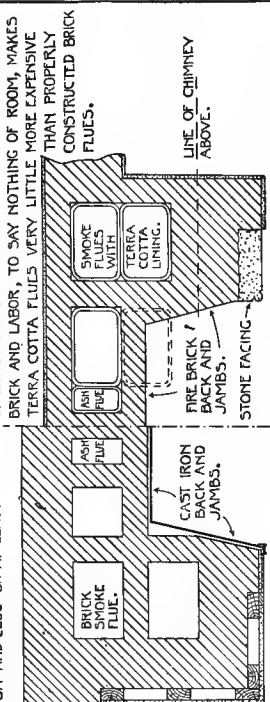
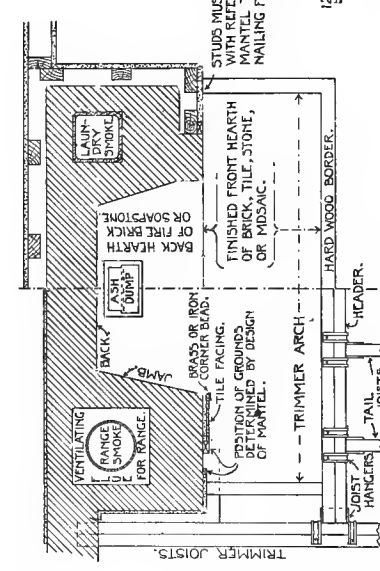
BRICK FACING SHOULD BE BUILT UP WITH AND AS A STRUCTURAL PART OF FIREPLACE: SEE GENERAL NOTES.

WIDTH OF FACING OR DISTANCE FROM FIREPLACE OPENING TO WOOD MANTEL, SHOULD NEVER BE LESS THAN 6" AT SIDES OR 8" AT TOP OF FIREPLACE.

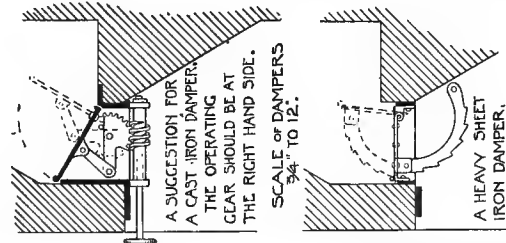
ROUGH BRICK ARCH BACK OF FACING. $\frac{1}{2}$ " x $\frac{1}{2}$ " IRON BAR SLIGHTLY COUNTERSUNK AND WITH ENDS TURNED UP.

CORNER BEAD. FACING OF TILE, MARBLE, OR TOSMATIC.

PLAN, ELEVATION, AND SECTION OF AN ORDINARY FIREPLACE.
PLAN AND ELEVATION SHOW TWO METHODS OF FINISHING, ONE EACH SIDE OF CENTER LINE.



TWO HALF PLANS SHOWING FINISHES AND FLUES FOR FIREPLACES. WITH A GREAT MANY FIREPLACES IN A SINGLE STACK, IT OFTEN REQUIRES CONSIDERABLE INGENUITY TO ARRANGE FLUES SO THAT THEY WORK OUT PROPERLY THROUGHOUT THE ENTIRE HEIGHT. SEE NOTES ON BRICK AND TERRA COTTA FLUES ABOVE.



FIREPLACE DETAILS.

GENERAL NOTES.

A PROPERLY CONSTRUCTED FIREPLACE SHOULD GIVE OFF INTO THE ROOM A MAXIMUM AMOUNT OF HEAT FOR THE FUEL CONSUMED AND SHOULD NOT SMOKE. IT IS EASY TO ACCOMPLISH EITHER OBJECT IF THE OTHER BE NEGLECTED, BUT TO ACCOMPLISH BOTH REQUIRES THE UT-MOST ATTENTION TO DETAILS OF FORM AND CONSTRUCTION. SPLAYED JAMBS REFLECT MORE HEAT INTO ROOM THAN JAMBS SET AT RIGHT ANGLES TO BACK; BUT THE CON-STRUCTION OF FLUE AND THROATING IS RESPONSIBLE FOR MOST OF THE GOOD OR EVIL IN A FIREPLACE. CHIMNEYS SHOULD BE CARRIED WELL ABOVE THE HIGHEST LINE OF NEAR-BY ROOFS AND EACH FIREPLACE SHOULD HAVE A SEP-ARATE FLUE. EXPERIENCE SEEMS TO INDICATE THAT THE CLEAR SECTIONAL AREA OF THE FLUE SHOULD BE ABOUT $\frac{1}{12}$ TO $\frac{1}{10}$ THAT OF THE FIREPLACE OPENING. THE THROAT SHOULD ALWAYS EXTEND ACROSS THE FULL WIDTH OF OPENING AS NEAR THE FRONT AS POSSIBLE AND ITS SECTIONAL AREA, IF DAMPER IS NOT USED, SHOULD BE NEARLY THE SAME AS OR A LITTLE LESS THAN THAT OF THE FLUE. DAMPERS ARE EXCELLENT TO REGULATE WIDTH OF THROAT AND DRAFT, BUT THEY SHOULD OPEN THE FULL LENGTH OF THROAT. IN LARGE OR HIGH FIREPLACES COUNTERBALANCED "BLOWERS" OR "APRONS" OF IRON OR COPPER (USUALLY TREATED ORNAMENTALLY) ARE SOMETIMES HUNG TO SLIDE UP OR DOWN JUST BACK OF FACING OR AT FRONT OF THROAT. THE BACK OF FIREPLACE SHOULD INCLINE FORWARD TO THROAT. SEE FURTHER NOTES ON DRAWINGS.

FIREPLACES ARE USUALLY FROM 2' 6" TO 4' WIDE, 16" TO 22" DEEP, AND ABOUT 2' 6" HIGH, THOUGH MANY ARE MADE LARGER AND COAL GRATES ARE OFTEN MADE MUCH SMALLER. AN ASH FLUE SHOULD BE PROVIDED TO CARRY ASHES TO PIT IN CELLAR. ONE ASH FLUE IS USUALLY SUFFICIENT TO SERVE ALL THE FIREPLACES IN AN ORDINARY CHIMNEY.

SCALE - $\frac{3}{8}$ " = 12", EXCEPT FOR DAMPERS.

